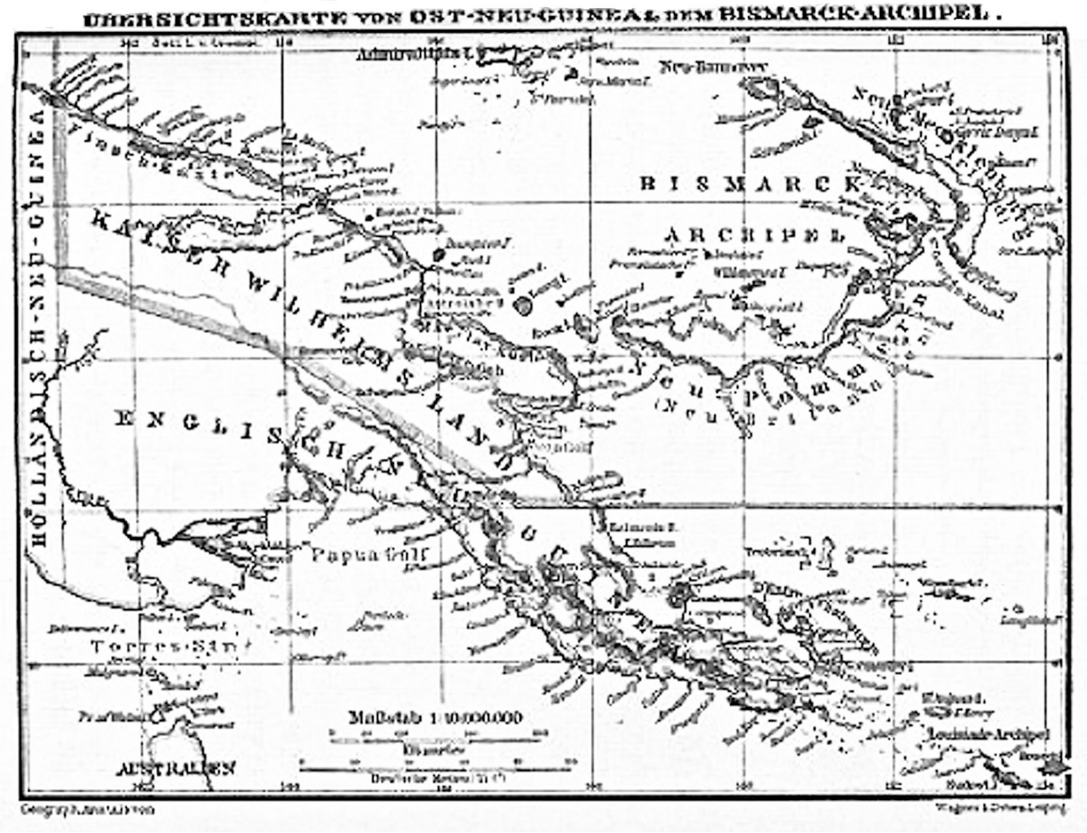
NEW GUINEA

BY

DR MAXIMILIAN KRIEGER



Translated by John Dennison

Edited by John Dennison and Glenn R. Summerhayes

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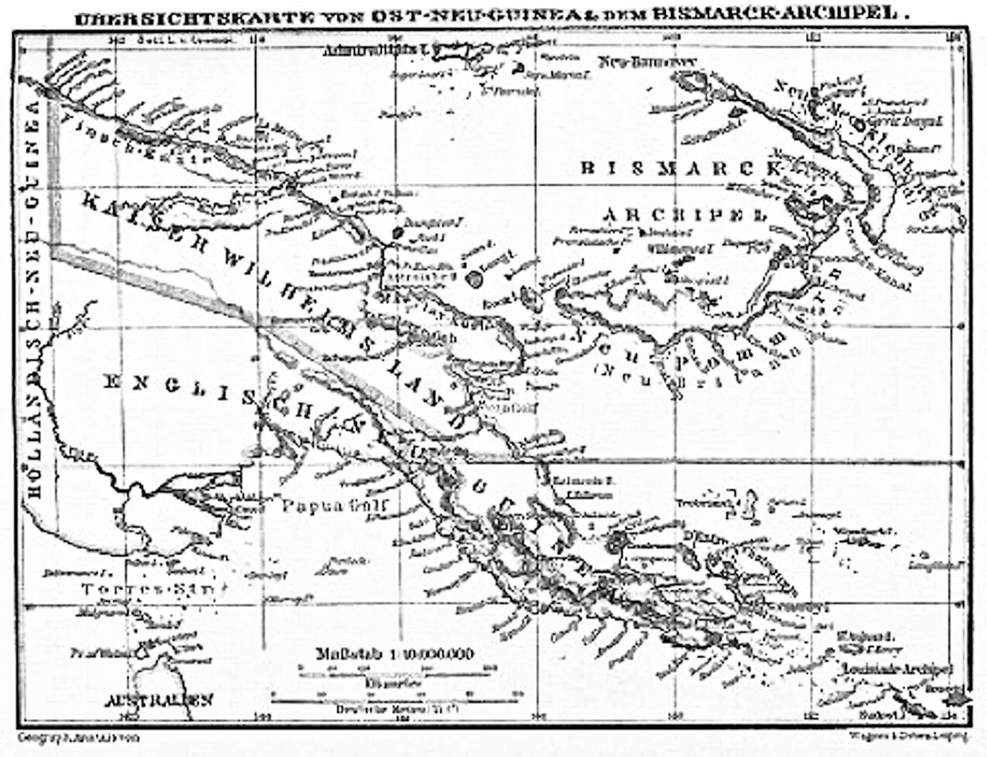
with contributions from

Professor Baron A. von Danckelmann, Professor F. von Luschan,
Curator Paul Matschie, and Professor Otto Warburg

with the support of

The Colonial Department of the Foreign Office, the New Guinea Company
and the German Colonial Society



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Neu-Guinea

von

Dr. Maximilian Krieger

mit Beiträgen von

Professor **Dr. A. Freiherrn von Danckelman**, Professor Dr. F. von **Luschan**, Kustos **Paul Matschie** und Professor **Dr. Otto Warburg**

mit Unterstützung

der Kolonial-Abteilung des Auswärtigen Amtes, der Neu-Guinea-Kompagnie und der Deutschen Kolonial-Gesellschaft

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To His Highness

The Duke-Regent Johann Albrecht

of Mecklenburg–Schwerin

the great promoter of our colonial enterprises

respectfully dedicated

by the author

Seiner Hoheit

dem Herzog-Regenten Johann Albrecht

zu Mecklenburg-Schwerin,

dem hohen Förderer unserer kolonialen Sache,

ehrfurchtsvoll gewidmet

vom Verfasser

Author's Foreword

The German section of New Guinea, Kaiser Wilhelmsland has entered into a new stage of its political and economic development through the transfer of sovereignty from the protectorate of the New Guinea Company to the German Empire. It may therefore presently — despite the often still-inadequate documentation — appear necessary to give a summary of the island, which enables a comparison of the colonial possessions of the three states represented in New Guinea: Germany, Great Britain, and Holland.

It is attempted in the following, based on a detailed source study and experiences gained on the spot during an almost thirty-year stay, to design just such a total picture of the island of New Guinea.

The publishers of the *Bibliothek der Länderkunde* have shown a warm willingness to allow *Neu-Guinea* to follow, as the fifth and sixth volumes, their most recent volume, *Italien*. With full gratitude for the inclusion of this book in the library it is pointed out to the reader, right from the outset, that in this volume the ethnographic outweighs the geographic. It finds its justification in the fact that the interior of the island is, for the most part, even today *terra incognita*. On the other hand, the coastal and interior tribes offer, in an ethnographic relationship, so much that is remarkable and spectacularly different among themselves that their detailed description takes up by far the greater part of this book.

Through the gracious favour of His Majesty the King and Kaiser, for which the author owes his most humble thanks, several valuable illustrations from the southeast of British New Guinea have been placed at the disposal of the book for paramount use.

The Colonial Department of the Imperial German Foreign Office, the German Colonial Society and the New Guinea Company have supported the work through major contributions; and finally, many friends of German colonial affairs, such as Professors Baron von Danckelmann, von Luschan and O. Warburg, and the curator of the Natural History Museum, P. Matschie, through their scientific efforts; others again, such as His Excellency the Secretary of State (retired) Duke Councillor Professor Baron von Richthofen among others, by their volunteered advice, encouraged the author's efforts: to you all my most grateful thanks

Perhaps the content of the book, which has been written right to the point, with great joy and affection, will contribute to raising the interest of a wider circle, about New Guinea, and to encourage the study of the usages and customs of the natives of our Protectorate by all those who set out for New Guinea as coworkers in the great, communal, colonial task.

Gross-Lichterfelde near Berlin, June 1899

Dr Maximilian Krieger

Editors' Foreword

This is the fourth publication translated from German into English by John Dennison for the Otago University Anthropology/Archaeology Publication Series. Krieger's *Neu-Guinea* was published in 1899. This book is a hefty tome at 522 pages, providing a detailed study into the island of New Guinea: its history, geography, its flora and fauna and its people. This book covers Kaiser-Wilhelmsland (New Guinea), British Neu-Guinea (Papua) and Dutch Neu-Guinea (Irian Jaya or west Papua) in minute detail, taken mostly from every published article/book available to the author. The result is a magnificent book ending with a chapter by Professor von Luschan called "Contributions to the Ethnography of New Guinea" which focusses on selected items of material culture.

We would like to dedicate this book to someone who, over many decades of faithful service, has made momentous contributions to Papua New Guinea: Sir Peter Barter GCL Kt OBE PhD (Hon). Sir Peter has made major contributions to many areas of PNG, including The Divine Word University, the Museum and Cultural Centre of Madang, the Tourist industry of PNG, and many others aspects of health and education. Sir Peter facilitated the research of many academics working in Madang, including archaeological research teams led by Summerhayes and others. He encouraged them to undertake research in Madang, and provided resources enabling the success of their projects. His enthusiasm and vision were inspirational. We cannot thank him enough!

Glenn R Summerhayes and John Dennison

Translator's Preface

This detailed study of Krieger's New Guinea continues a series, and follows:

The Empress Augusta / Sepik River, translation of Reche O. (1913): Der Kaiserin-Augusta-Fluss: Ergebnisse der Südsee-Expedition, II. A.1. (Ed. John Dennison, Glenn R. Summerhayes. University of Otago Working Papers in Anthropology, N° 2.) Seattle, Amazon. 495 p. (2015) [978-1517531966]

Admiralty Islands, translation of Nevermann H. (1934): Admiralitäts-Inseln: Ergebnisse der Südsee-Expedition, II. A.3. (Ed. John Dennison, Glenn R. Summerhayes. University of Otago Working Papers in Anthropology, N° 1.) Seattle, Amazon. 382 p. (2013) [978-1492739388]

St Matthias Group, translation of Nevermann H. (1933): St. Matthias-Gruppe: Ergebnisse der Südsee-Expedition, II. A.2. (Ed. John Dennison, Glenn R. Summerhayes, Lisa Matisoo-Smith. University of Otago Studies in Prehistoric Anthropology, N° 22.) Seattle, Amazon. 230 p. (2011) [978-1460976388]

Thirty Years in the South Seas. Land and People, Customs and Traditions in the Bismarck Archipelago and on the German Solomon Islands, translation of Parkinson, R. (1907): Dreißig Jahre in der Südsee. Land und Leute, Sitten und Gebräuche im Bismarckarchipel und auf den deutschen Salomoninseln. Bathurst NSW, Crawford House Publishing (1999) xxxviii + 378 p. [ISBN 1-86333-167-0]

Translation of this 522-page volume started after my retirement and, apart from some minor health interruptions, has finally come to fruition. There is a sense of satisfaction in that, although the body may be failing, the brain may still contribute to making meticulously-recorded, detailed, German research available to modern scholars, in my hope that it may be useful when I am gone, and that knowledge of the people of early New Guinea may not be lost.

I have retained Krieger's pagination within square brackets, for those fortunate enough to have access to the original German volume, and I have retained his placenames for their historical value. Converting the detailed Index from German into English was not easy (for instance A for *Arbeit* is listed under W for 'work' in English, and these were then aligned to my US-Letter pagination. . .)

I owe so much to my wife, Ann, who expected to have me "underfoot" when I retired, but now complains of viewing the back of my head framed by a computer screen. With her patient forebearance, she understands that I want to leave as much translated material available, while I am able. And I am grateful to Professor Glenn Summerhayes, Department of Anthropology and Archaeology, University of Otago who painstakingly reviewed my text for "typos" and, as an Australian, patiently advised me that the kangaroos in New Guinea live up in trees.

I wish you well in your research.

K.J. Dennison
Dunedin, December 2017

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I. Location, Size and Outline

New Guinea. the link between the East Asian and Polynesian archipelagos, is bordered to the west by the Moluccan waters, and to the north, east, and south by the Pacific Ocean.

The island stands on the continental shelf of Australia, from which it is separated only by the shallow Torres Strait, and forms the principal component of the great island arc that borders the Austral-Continent in the northeast, and finds its southeastern terminus in New Caledonia.

After Greenland, New Guinea is the biggest island in the world. It stretches 2,390 km, from 0° 15’ S. as far as the twefth parallel. Its greatest width is 600 km; its narrowest between Geelvink Bay and MacCluer Gulf: about 30 km. New Guinea covers almost exactly one third of the area of Greenland, since it covers 785,362 square kilometres including the close-inshore Frederick Henry Island; excluding the latter, 774,362 square kilometres. The island does not have a bulky outline like the Australian continent. Its outer shape has been compared to that of a bird: the prominent northern peninsula represents the head; the neck, the piece between Geelvink and Etna Bays; the rest, the body, whose tail is extended to the southeast. To the west, MacCluer Gulf, Triton Bay and the Papuan Gulf make large indentations into the coast running from northwest to southeast; in the east Geelvink Bay and Huon Gulf.

If one follows the coast from northwest to southeast, it appears as a cliff from the Cape of Good Hope as far as Geelvink Bay, and likewise from there to the German border [2] except for small stretches where estuaries like the Kei, the Ambernoh, Wiriwai and Witriwai among others turn the coastal country into lowlands.

A few miles from Humboldt Harbour the Finsch coast begins, with densely-wooded hills interrupted here and there by grasslands. Following on from this is the Hansemann coast, which appears as cliffs roughly as far as the Empress Augusta [Sepik] River, but then as lowlands. A rugged, mountainous region succeeds this, from Hatzfeldt Harbour as far as the Huon Gulf. From here to the Anglo-British border the steepness of the coast steadily decreases, and in the extreme southeast of the German protectorate it transforms into a densely-forested plain. From the Anglo-German border to Collingwood Bay the heavily-indented coastline is initially mostly a densely-wooded lowland; from Cape Bird peninsula it climbs again, and remains as cliff into the Elema district. The coastline of the Papuan Gulf and the coastal stretch up to the Dutch border is mostly low and swampy. Only in the region of Triton Bay does the coastline rise again, and it does not alter its form right to the extreme northwestern peninsula of New Guinea. [3]

II. History of Discovery and Exploration

The discovery of the island falls within the era of the lively struggle between the Spanish and Portuguese for possession of the rich Moluccan Archipelago, at the beginning of the sixteenth century. During the course of these struggles, the famous Portuguese navigator, Don Jorge de Menezes decided on a coup to drive the Spanish from the Moluccas, and embarked on this goal, sailing from Malacca, but not by the usual route south of Borneo and the Celebes. He set his course north of Borneo. Driven too far southeast by adverse winds and currents, he inadvertently drifted onto the north coast of New Guinea, where he landed in 1520 and lingered for a month in the harbour of Versyn (Warsai).

Eleven years earlier, in a letter by the Florentine, Casani, there is mention of a broad land lying east of the Moluccas, probably meaning New Guinea.

In the year 1528 a Spaniard, Álvaro de Saavedra Cerón, was the second to sail along the north coast of New Guinea and, surmising that it concealed gold, named it *Isla de Oro*. Then for several years we heard nothing of New Guinea. Only in 1537 it was again a Spaniard, Grijalva, who suffered shipwreck on the north coast. A quinquennium later, Humboldt Bay was discovered in the northeast of New Guinea by Luis Váez de Torrès. The name that the island still holds today was bestowed by the Spaniard Ortiz de Rete. On the *San Juan* out of the Moluccas, he covered a stretch of 250 nautical miles along the northeast coast, and named the island, which he annexed for Spain, *Nueva Guinea*, in view of the similarity of its inhabitants to those of African Guinea. In the Moluccas it was called, and is called to this day, "Tanna Papua".

In the following century it was mainly the Dutch [4] who contributed to further discovery and exploration, along the west- and southwest coasts of the island. In 1605 Willem Janszoon reached Frederik Hendrik Island on the southwest coast, and in 1606 Jan Lodewijkszoon van Roseingeyn visited the Aru and Kei islands while sailing along the west coast of New Guinea. In the following years Willem Schouten discovered Yapen Island in the east, and the Schouten Islands named after him; and the Dutchman Jan Vos visited the southwest coast. Soon after, in the year 1623, the Dutch East India Company dispatched Captain Jan Karstensz to explore the south coast; and Gerrert Pool, Abel Tasman Visscher, Maerten Fries, Frederick Gommersdorp, Willem Buys, Nicolaes Vinck, and Johannes Keyts explored long stretches of coastline. Various inlets, broad MacCluer Bay in the northwest, and Geelvink Bay in the northeast were discovered at this time, and treaties were concluded with the chiefs of the Aru and Kei islands.

In the eighteenth century the English and French superseded the Dutch in further exploration of the country. In 1770 James Cook sailed along the coast, but did not land. The Englishman Forrest, dispatched by the British East India Company, visited Waigu and Doreh. Captain Edwards in the *Pandora* also landed on New Guinea, and Captain Bligh aboard the *Bounty* passed through Torres Strait. In 1768 the French ships *la Boudeuse* and *Étoile*, under the command of Bougainville, cruised the south and the east coasts, and in 1795 the Frenchman d'Entrecasteaux named the bay that he discovered in the southeast, Huon Gulf. Two years earlier, New Guinea had been annexed for Britain by Kormuzin and Chesterfield, of the East India Company's British ships, who raised the British flag in Geelvink Bay, while their troops occupied the island of Manasvari for some time.

In the year 1824 a demarcation treaty was signed between the Netherlands and England, in which the Dutch Government reserved the island of New Guinea up to 141° 47' E.

Exploration of the country then moved forward with giant steps. Duperrey and Lesson on the *Coquille* and the well-known French Admiral Dumont d'Urville on the *Astrolabe* visited New Guinea. The latter sailed mainly [5] on the northeast coast and, as an admirer of the great German scholar, gave Humboldt Bay its name. In 1826 the Dutchman Kolff discovered Princess Marianne Strait between Prince Frederik-Hendrik Island and the mainland, and Captain Steembom on the *Triton* sailed along the south coast and actually took possession of New Guinea west of 141° 47'.E. for Holland. In the recently-discovered Triton Bay the Dutch established Fort Dubus in 1828, but soon surrendered it once more.

The English warship *Fly*, under the command of Captain Blackwood, discovered the first great river in New Guinea in 1845, and the first of the larger harbours was discovered likewise by an English warship, the *Basilisk*, in the British zone. The river was named after the vessel, Fly, and the harbour Port Moresby, after the commander of the ship that first anchored there. Coastal recordings were made by Dutch warships in the southwest; by Captain Owen Stanley, on the part of the English, on the southeast coast; while Captain Moresby aboard the *Basilisk* sailed northward along the latter as far as Huon Gulf, and likewise recorded the coastline. Meanwhile the first missionaries had found entry to the country: the Utrecht Mission established their missionaries at Geelvinck Bay in 1855; Catholic Missionaries came to Rook Island (1852); and in 1872 the

London Missionary Society, under the Revs Chalmers, McFarlane, and Lawes began their fruitful activities on the south coast at Port Moresby.

At the same time explorers came to the country. The Englishman Wallace visited New Guinea in 1858, and a few years later the German, Bernstein. The Italians d'Albertis and Dr Beccari visited the west coast of New Guinea, near Karas Island, and the northwest coast near Doreh, in 1872. Dr Bernhard Meyer was the first to cross the island, at the narrowest point, between MacCluer Gulf and Geelvink Bay, and in Sydney and London the British New Guinea Company and the New Guinea Colonisation Company launched further exploration of the country, with only the latter achieving anything of great importance.

Renewed attempts at ultimate seizure of the whole island, in so far as it was not already under Dutch occupation, were made in 1846 by the English under Lieutenant Yule, and in 1883 by the Queensland Government through their agent, Chester, on Thursday Island. The latter however received just as little [6] recognition by the British crown as had the attempt at annexation at the end of the previous century.

Finally, a third power, our German Fatherland, had emerged in New Guinea at this time, with justified claims. The level of development that German trade had achieved in the South Seas had led to the formation, at the beginning of the eighties, of the New Guinea Company, chaired by Commercial Privy Councillor von Hansemann. Its goal was the acquisition of German colonial possessions, and the promotion of German trade in the South Seas. Other authoritative circles became interested and, after extensive diplomatic negotiations, an agreement was concluded between Great Britain and Germany on 6 April 1884, under which the British claim on the southeast of New Guinea was reduced to 8° S. From then on, there were three colonial powers participating in the high task of the colonisation of New Guinea. The manner in which each of these powers undertook their task, and has lived up to it, will be set down in what follows.

To examine and evaluate this question, it is first necessary to get to know the land and people in more detail, as was found by each of the three nations at the beginning of the project of colonisation.

We cannot find out much from the Dutch about their protectorate in New Guinea nor their subjects, for the simple reason that they themselves knew little about the country and its inhabitants at that point. Only in more recent times, since 1875, have they become more concerned about actual coastal exploration. Their warships *Soerabaya*, *Egeron*, *Anjer*, *Tagal*, *Hawik*, *Sin Tjin*, *Bromo*, and *Batavia*, have defined the coastline here and there, and visited the surrounding islands. They are grateful to the missionaries and the explorers already mentioned, like Rosenberg, Beccari d'Albertis and Finsch, for several explanations about the country and its people. Thus, through publications by these travellers, the compilation of their Robinson van der Aa, and the reports of the Dutch warships and the Utrecht missionaries, only sparse material for the evaluation of the land and people of the German protectorate has come to hand.

The missionaries in British New Guinea have contributed to the exploration and knowledge of the land to a far greater degree than in Dutch New Guinea, through expeditions and publications. Thus the missionaries are to be thanked for the discovery of the greater part of the main [7] rivers of New Guinea. The Reverend J. Chalmers discovered the Mai Kassa; then later MacFarlane with Mr Chester went about 143 km up this river, and on the Gulf of Papua Baxter and Katan penetrated inland on the Fly. Chalmers further explored the area round Port Moresby; the Milne Bay region in the southeast; travelled along the entire south-east coast, from the Aird River to Goodenough Bay, in part by canoe, in part by steamship or launch; and in particular by the discovery of the Purari River contributed to the exploration of the country.

Bigger expeditions were undertaken later by Morrison in the Ebe district; by Forbes, Chalmers and MacGregor in the Owen Stanley Range; by Cuthbertson on Mount Obree; by Edelfeld on Mount Yule; by Mr Armit in Sogeri territory and up the Kemp-Welch River.

MacGregor and Everill distinguished themselves in further exploration of the Fly River; Captain Strachan, Mr Chester, Strode Hall, Beswick among others distinguished themselves in exploration of the Mai Kussa; likewise Bevan with the Aird; Beswick with the Kemp-Welch; and Chalmers with the Arva. Most recently, MacGregor, by his intrepid crossing of New Guinea from the mouth of the Mambare to the mouth of the Vanapa in Redscar Bay, has demonstrated that such a project is not too difficult to achieve, if you start out right.

MacGregor has performed outstandingly not only in his capacity as Governor, but also as geographical explorer of his territory. His traverse of New Guinea can stand gloriously alongside the ascent of the Owen Stanley Range, which he undertook on 22 April 1889 from Manumanu in Redscar Bay with four Europeans, a Samoan, five Polynesians and thirty-two Melanesians. MacGregor had correctly recognised that from the coast the Vanapa River offered a given route in to the Owen Stanley Range. After travelling for five days up this river to a place where it was only about seventy metres wide but increasingly common rapids made further progress impossible, the expedition decided, after previously-arranged reprovisioning, to march back down on foot. After passing the Glees- and Guba Mountains, after traversing of the ridge of Mt Kowald, [8] having kept to the right bank of the Vanapa, they crossed over, at the same time sending a small, reliable division to the coast to organize further provisioning of the expedition en route. Then proceeded — from here on, only two Europeans, two Polynesians, one Samoan, and eight Melanesians — over Mt Bedford and past the source of the St Joseph River, over Mt Musgrave then to Mt Knutsford (3400 m.). On 8 June they reached Mt Knutsford. There, because of severe foot wounds, one European, a Polynesian, and five Papuans had to be sent back to the camp on the Vanapa. To cover all eventualities, a twenty-pound sack of rice was hidden at this spot, and the remainder of the expedition, consisting of MacGregor, one Samoan, a Polynesian, and three Papuans, set out in good spirits in the afternoon of 8 June to continue their trek, in the hope of reaching their goal within a few days. Provisions would last for six days and, with rationing, could extend to ten days. MacGregor reckoned on four days for the climb, and for the descent to the spot where they had hidden the rice, a further four days. After just three days, on 11 June 1889, after a toilsome trek over the Dickson Pass and Mt Douglas they reached the peak of the Owen Stanley Range, Mt Victoria, an altitude of 4280 m., 26 days after setting out from the Vanapa camp, and 51 days after leaving the coast, without loss of life or peril. A wonderful, distant view made up for the great hardships that had become quite considerable, particularly in recent days. The highest peaks of the d'Entrecasteaux Islands were visible to the east; to east and southeast there were many columns of smoke, indicating the density of population; between Owen Stanley and the north coast the giant Mt Gillies and Mt Parkes stood out clearly. There were two days of rest on the northwestern peak, and the rest time was used for recording geological data and for making botanical and geological collections. On the morning of the 13 June they set out on the return journey and reached the coast on 25 June.

The coastline of Kaiser-Wilhelmsland has become more familiar only since the twenties of this century. The French warships *Coquille* under Duperrey, and *Astrolabe* under Dumont d'Urville visited the coast in 1826 and 1827; and in 1873 and 1874, as already mentioned, the [9] English Captain Moresby paid a visit aboard the *Basilisk*. One of the first Europeans to gain a firm foothold on land was the Russian explorer Miklukho-Maclay who explored the surroundings from Bongu on Astrolabe Bay, from 1871-1872 and from 1876-1877. The Englishman Hugh Hastings Romilly stayed for a short time on Astrolabe Bay a few years later also. They all describe the coast of Kaiser-Wilhelmsland as enclosed: poor in harbours, rich in reefs. Only the more detailed exploration of the coastline by Dr Otto Finsch and Vice-Admiral (ret.) Baron von Schleinitz, who are known to have sailed along the coast at the beginning of the eighties and determined it more precisely, bestows its better reputation. In contrast to the earlier predominating view of the danger of navigation, von Schleinitz determined that for the voyage from China to Australia the route

along the coast of Kaiser-Wilhelmsland is, without question, the shortest and at the same time the least dangerous voyage.

Tirelessly, Baron von Schleinitz, in his capacity as the first governor of the protectorate of the New Guinea Company, applied himself especially to the exploration of the Huon Gulf, and at his instigation, and under his proven leadership, expeditions were successfully undertaken into the interior of the country, in particular where river courses relieved this difficult task, by suitable men like Hunstein, Kubary, Dr Schrader, Dr Hollrung, and Dr Schneider. Exploration of the country has been promoted especially in more recent times thanks to the activity of the New Guinea Company and the helpful support of the Imperial German Foreign Office as well as the joyful self-sacrifice of individual explorers like Zöller, Ehlers, Dr Kersting, Dr Lauterbach, Tappenbeck etc., so far so that today we already have a somewhat clearer picture of the coastal land and also the interior, especially where river courses open the way into the interior.

The sadly unlucky expedition of Ehlers was fitted out by himself at his own cost, with the support of the New Guinea Company. It consisted of the well-known explorer Otto Ehlers, police sergeant Piering, Mr Ehlers' 14-year-old servant, Shokra, and thirteen natives from the Solomon Islands, New Ireland and New Britain, and set out on 15 August 1895 [10] from Bayern Bay on the Huon Gulf, into the interior of Kaiser-Wilhelmsland. They had set themselves the goal of crossing the southeastern part of new Guinea from that point to the opposite coast on the Heath River, in the shortest possible time. Unfortunately, the execution of the project had been gone into with too much haste and without due preparation, right at the time when the rainy period had set in in the southeast of New Guinea. Ehlers, unfamiliar with the difficulties of an expedition through the thickest primaeval forest, hoped to traverse the stretch, about 160 km in a straight line, in about thirty days. After he had marched until about 22 September with his troop in the most unfavourable temperature and path conditions (as a rule each stride that a person progressed, had to be cleared with an axe, through thick undergrowth) the expedition's food supply ran out. For the next fortnight Ehlers and his companions had to feed on grass and plants that they found in the bush, and had to suffer in silence from leeches, through bites with, moreover, red worms in them. Only right at the beginning of the journey did the expedition, initially following the Franziska River and then a small tributary, encounter a big native village, whose inhabitants had shown themselves to be joyous and welcoming. For all the rest of the trek right to the Heath River they did not meet natives: it was eerily silent in the bush, which was composed of tall trees and undergrowth; no bird stirred, and despite assiduous searching the expedition did not succeed in discovering any wild game. The region through which they moved was mountainous country. Continual rain, thick cloud, and rocky outcrops also hindered the march. They had to swim across three big rivers. Finally, because the bearers' strength was steadily declining, the tents and all sorts of dispensable luggage were left behind, at the foot of a tree marked by an axe. Indeed the last ten days' march to the Heath River had to be covered without a compass, since of the two that had been brought along, one had got lost soon after setting out while the other had been smashed when Piering unfortunately fell over a boulder.

Not until seven weeks after setting out did the expedition reach the Heath River, which was already in British territory. As is generally known, Ehlers himself, his companion Piering, and [11] Shokra, while they were getting onto a raft constructed under Elders' direction by the coloureds, to travel downstream to the coast, were treacherously murdered by Ranga and Opia, two Solomon Islanders from the Kaiser-Wilhelmsland police troop, who had been given to the expedition. The remaining twenty-two natives arrived at the village of Moviawi (about 40 km from the coast) towards the end of October; they were taken from there to the English mission station at Motu-Motu by the natives; and from there they were brought to Port Moresby by the missionaries.

The expedition to explore the Bismarck Range, undertaken in 1896 by Dr Lauterbach, Dr Kersting, and Ernst Tappenbeck, with the assistance of the Foreign Office, the Geographical

Society, and the New Guinea Company, had a better outcome. In particular, this led to the discovery of the Ramu River and the initiation of friendly relations with the natives of the interior.

To date, the following has become known of the expedition dispatched into the Ramu region and the Bismarck Range, led by the previously-mentioned explorer Tappenbeck, at the instigation of the New Guinea Company: On 13 April 1898 Tappenbeck, with the *Johann Albrecht* reached the mouth of the Ottilien River and, after a successful five-day journey, arrived at the spot that the 1896 Kaiser-Wilhelmsland Expedition had reached on the Ramu journey. There the very strong current prevented further navigation up the Ramu; the return journey started on the same day, and a further fifteen kilometres downstream, at a spot where the steamer had run onto a sandbank, arrived at a station. In their reorganisation, or their preservation, two Europeans, several Javanese, and twenty Melanesians were left behind, with provisions calculated to last six months, while Tappenbeck and the rest of the team hastened to the coast to fetch the sternwheel steamer *Herzogin Elisabeth* waiting at anchor for the expedition in Adalbert Harbour. Delayed by adverse conditions, he only got back to the stopover station on the Ramu on 3 September, then took its previous head to a new station at the mouth of the Ottilien River, while he himself went further up the Ramu to tackle the setting-up of a station at the foot of the Bismarck Range. [12]

III. The Island in Relief

The entire northwestern peninsula between 1°15’ and 2° S. is permeated by east–west ridges of medium height, which reach their greatest elevation in the Arfak Range at 2470–2900 metres. The latter lies roughly between 133° and 134° E. and 1°30’ to 1° S. High, wooded shores rising up to 1000 metres border the MacCluer Gulf in the west; and in the east the Wandammen-, Jauer-, and Kudiri Mountains extend along Geelvink Bay. The highest elevations are the Karl Ludwig Mountains in Dutch New Guinea, which extend in a direct east–west direction along the fourth parallel between 134° 30’ and about 139° E. In the northeast of the Dutch Protectorate we then have a few lower mountain ridges: the van Rees Range on which rises the biggest river so far discovered in Dutch New Guinea: the Ambernoh or Rochussen River, with the Wakseri Mountains; the Gautier Range with the Wunsuddu Mountains (2000 metres) and, northwest of Humboldt Bay the Cyclops Mountains, which rise to just 900 metres. Only a few lakes have been discovered so far in Dutch New Guinea, such as Lake Kamaka found by Miklukho Maclay in the north of Triton Bay; Lake Sentani inland from Humboldt Bay; and Lake Yamoor discovered by Dr Meyer inland from Geelvink Bay. The discoverer, Missionary Bink, specifies the surface area of Lake Sentani as just as large as that of Humboldt Bay itself.

In the coastal areas of Kaiser-Wilhelmsland coral limestone structures occur probably up to 100 metres high on the mountain slopes, which, like the Hansemann Range and more clearly in the region [13] east of Dorf Island reveal several terraces. On the Sattelberg, as on the heights of the Bupollum River, cretaceous rock appears, and the region south of the Hercules River contains, according to certain signs, gold-bearing reefs. The coastline is sometimes steep coral coast, as for example between Constantine Harbour and Cape King Wilhelm, and sometimes coral sand, with rough, river boulders here and there.

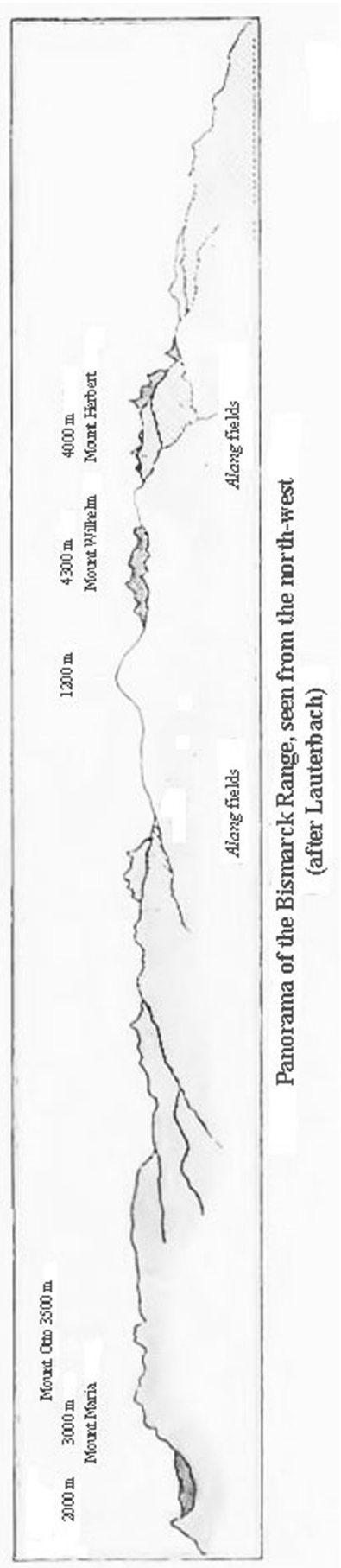
The portion of Kaiser-Wilhelmsland from Prince Albrecht Harbour to north of the Huon Gulf is markedly structured mountainous country. Extensive lowlands west of the Empress Augusta River and further towards the Dutch border, between Prince Alexander- and Torricelli Ranges, give place to mountainous country. The Torricelli Mountains have their highest point in the Hohenlohe-Langenburg Mountains, while the Prince Alexander Range rises to 1260 metres. Southeast of the Empress Augusta River stretches the Hunstein Range, and west and east of that several other so far unexplored ridges between 142° and 145° E., and extending north of 5°, connected further westward, in the vicinity of the British–German border, roughly between 141°40' and 142°20' E, with the 2000 metres-high Victor Emanuel Mountains. Low chains of hills fringe the coast between Cape Gordon and Pallas Point, climbing inland between Prince Albrecht and Hatzfeldt Harbours up to 200 metres in the Tamberro chain.

Franklin Bay further southeast is similarly skirted by a forested chain of hills that rises further inland to a higher chain of mountains, with its highest points in the Prince Oskar-, Prince August- and Prince Adelbert Mountain (about 1200 metres). The left bank of the middle Ramu River accompanies a mountain range about 1500 metres high, while a broad plain extends on the right bank of this river. On the coast of the "Archipelago of Contented People", between Grand Duke Alexishafen and Friedrich-Wilhelmshafen, the densely-forested Hansemann Range extends in a northwest–southeast direction.

The geological nature of the markedly-indented Astrolabe Bay similarly reveals coral formations. Isolated sticks of *Madrepora* can be seen everywhere on this coast, probably due to uprisings of the seafloor at this site. [14]

Along a fourteen-kilometre straight line from Gorima Point to Astrolabe Bay rises the Örtzen Range, a mountain range stretching mainly north–south, drained by numerous small coastal rivers that empty into Astrolabe Bay. The main part of the range, which is sometimes called "Mudju" by the natives, and at other times "Tajomanna" climbs to 1100 metres, and is consistently covered in forest. It consists of steeply-rising conglomerates, whose constituents are young volcanic rock, coral limestone and slate. The central and eastern sections of the range are markedly fissured. Behind the midrib rises, in an easterly and a westerly direction, a series of parallel chains: Suor Mana, Sambu Mana with Mount Constantine, Horegorn with Mount Baer and Mount Meschtersky. The massif Suor Mana is also called "Szigaun" by the natives; arising from it is the Nurn or Elisabeth River, a tributary of the Gogol that was discovered in 1890 by the plantation head, Kindt, and explored a distance upstream from its entry into the Gogol, by Lauterbach.

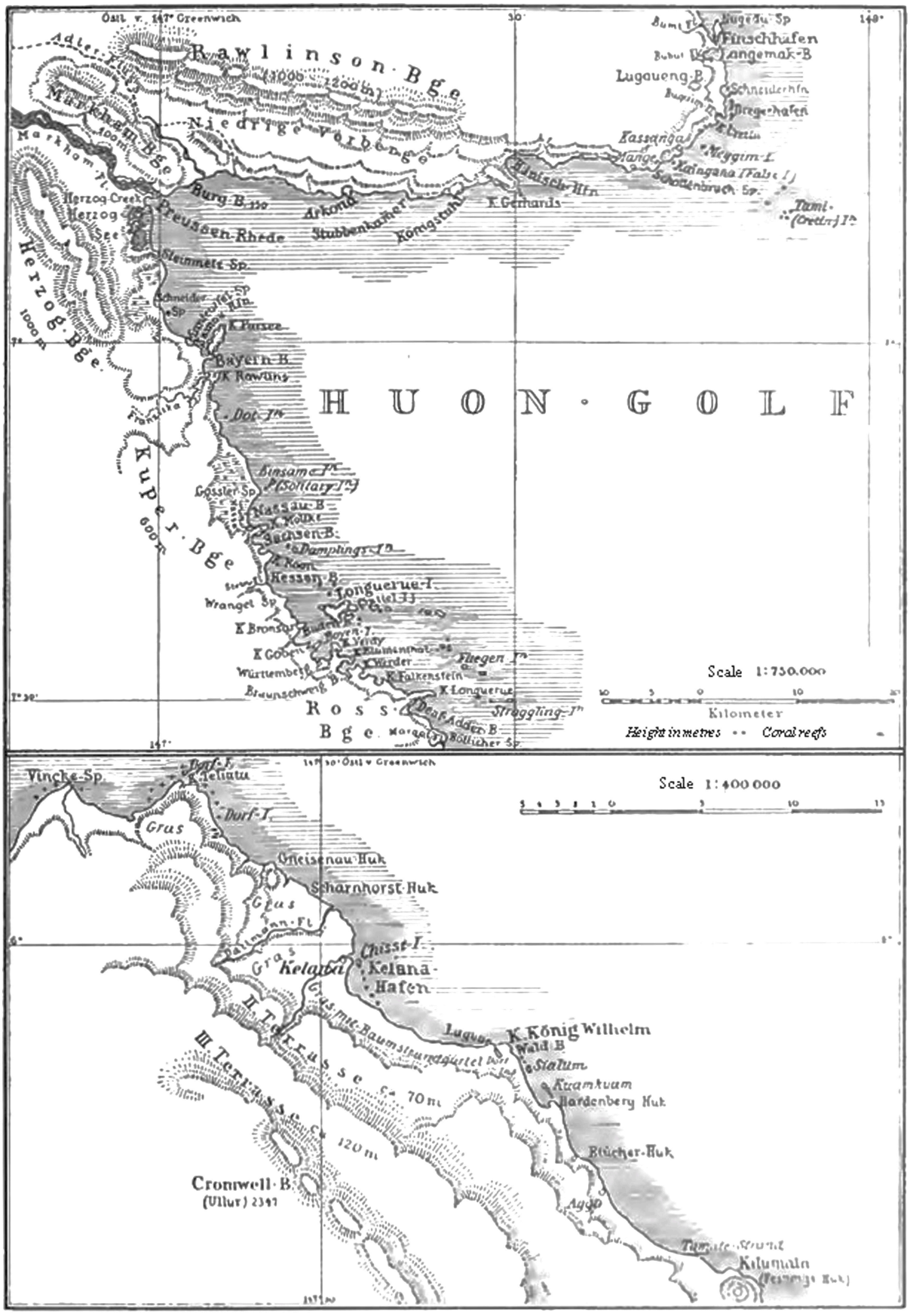
The Szigaun massif extends roughly in a southeasterly direction from Nurn as far as Kabenan, and conceals, further to



Panorama of the Bismarck Range, seen from the north-west (after Lauterbach)

the south, a mountain about 1500 metres high called “Karfa” by the natives. In front of this, are about ten more parallel chains up to 2000 metres high, running from NW to SE, the nearer ones only 400 metres high. From Szigann, the scout’s eye spies the northern part of the Bismarck Range; indeed when the weather conditions are favourable, in the blue haze the Sir Arthur Gordon chain in the British zone. Probably the Bismarck chain is connected with the latter, and also with the Albert-Victor chain in British New Guinea. A broad valley separates the Bismarck chain from a range further westward, about 4000 metres high: the Hagen Range (Lauterbach, 1898). The Bismarck Range offers up a peculiarity, with its rapidly-changing form in the daytime, as a result of different lighting. As far as is known, it consists of a number of parallel chains extending from NW to SE, whose highest sections are extremely rugged and torn, and variously without vegetation; the middle, wooded heights have a more rounded form, and towards the north the mountain chain flattens to about 2000 metres. The range has its highest elevations in Mount Herbert, Mount Wilhelm, Mount Maria, and Mount Otto (4300 – 5000 metres). After rainy-cold days, these peaks seem to be covered in white snowcaps; further down, a pale grey sheen shows the presence of grasses and alpine plants (Lauterbach, 1897). Judging from the scree in its rivers, the central part of the range is composed of slate, which is permeated by large veins of quartz. Inferred from this, as Lauterbach believes, is the presence of gold. Quite recently, the New Guinea Company has therefore dispatched an expedition up the Ramu River into the Bismarck Range, under the leadership of E. Tappenbeck, to examine the area for the presence of gold (see also Chapter VII, section 6). The mountain ranges following towards the coast contain sedimentary rock of slate and sandstone down to coarse conglomerates, alternately interspersed with coral rock. In front of the Bismarck Range ESE, is the Krätke Range with Hellwig and Zöller Mountain (3300 metres), and stretching in a southeasterly direction from the Krätke Range, from 146°50’ to 147°20’ E., the Rawlinson Range, 1000 – 1300 metres high, covered in tall jungle right up to the highest peaks. In front of both these mountain ranges, to the north, is the Finisterre Range, which has become somewhat better known through Zöller’s ascent. It extends, [16] with Neven du Mont (2660 m.), Mount Kant (3175 m.), and Mount Schopenhauer (3353 m.), between 146° and 147°20’ E., south of the sixth parallel. On the Maclay coast, roughly between 145°30’ and 147° E., stretches the coastal range, and southeast of Dorf Island we encounter the remarkable terraced land already mentioned. The land builds itself up in three stages, like an amphitheatre, for about twenty nautical miles along the coast, the three terraces 250–300 metres high. In any case, an elevation of the land has taken place, confirmed by the fact that at a height of more than thirty metres it has a coralline substrate. The first two terraces are only 1 to 1½ km wide and have a coral floor only at the rim. The third terrace has a depth of 1–3 km and contains more coral. The terraces are free of bush, covered only in grass, and are probably valuable for growing trees.

In a southeasterly direction from the terrace land, the offshoots of the Finisterre Range, in the Cromwell and Money Mountains, rise to a height of about 2350 metres; and about twelve nautical miles southeast the Sattelberg (970 metres) dominates the region as the highest knoll in a system of low mountain ranges. As already mentioned, the formation is cretaceous limestone. Steep, deeply-creviced valleys characterise these ranges. To reach the valleys and rivers you have to climb down very steep slopes. From Hänisch-Hafen to Cape Arkona on the northern corner of the Huon Gulf, the foothills of the Rawlinson Range approach close to the beach. Continuing further west, one soon notices a huge cleft bordered to the north by the 1200 metre high Rawlinson Range and to the south by the Herzog Mountains. The Herzog Mountains are a massive, continuous range stretching southeast to northwest. This range has its highest elevation in the south, at about 1000 metres. In its mid-heights the slopes appear to be very steep. Towards the coast, several side ridges extend in an easterly direction, falling flat to the coast. The deep cleft mentioned above is the Markham River valley. Between it and the Adler River lies the Burgberg,



Huon Gulf — Terrace structure of the coastal range near Cape King William

about 150 metres high, an offshoot of the 400-metre-high Markham Range. Further inland, on the right bank of the Markham River, we find the Schlossberg (about 300 metres high), and on its left bank the Hausberg, about the same height. The latter elevations in the German [17] zone are formed by the Cooper Mountains (600 metres) at about 7°12’ S., then the somewhat lower Ross Mountains about ten nautical miles southeast, and Mount Ottilien (350 metres) near Adolphhafen. The entire area between the coast of the Huon Gulf and the British border is still unexplored.

The first notable elevation in the British zone, after crossing the southeastern border from Kaiser-Wilhelmsland, is formed by the Hydrographers Range, a low mountain range that rises only to 600 metres and transforms towards the south into an undulating plain. It is located roughly between 148° and 148°30’ E. and 8°40’ and 9°10’ S., stretching firstly in an east–west direction then north–south. On the peninsula projecting between Dyke Acland Bay and Collingwood Bay the grass-covered coastal slopes later climb to a forested mountain landscape, reaching an altitude of 1200 metres on Mount Trafalgar and Mount Victory. Sixty kilometres away in a southerly direction rise the Hornby Mountains, between 148°53’ and 149°20’ E.; and the entire, further southeastern tip of British New Guinea is again a rugged mountainous area. Southeast of Cape Vogel Peninsula the Five Pinnacle-, Basilisk- and Stirling chains, in the middle from southeast to northwest the Kobio-, Owen Stanley-, Obree-, Suckling- and Hercus Ranges (1500–3500 metres) extend along the coast in an almost uninterrupted chain.

In front of the Owen Stanley Range we find in an easterly or northeasterly direction Mount Parkes (2400 m.), Mount Scratchley (3700 m.), Mount Gillies (2100 m.) Mount Otovia (2400 m.), Mount Wharton (3000 m.) and Mount Albert-Edward (3800 m.). Southwest of Mount Parkes a broad, thickly-wooded valley widens out, with three great inland seas; and south of Mount Scratchley the Yodda Valley (MacGregor, 1888-89). Both mountain giants are also separated from the Owen Stanley Range by deep gorges. At an altitude of 2000 metres, the vegetation here consists only of mosses and lichens. At an altitude of 3400 metres MacGregor’s ascent of Mount Scratchley encountered ice; the temperature at this height was unpleasantly cold; small grassy flats covered the ground and the region of creeping plants had already been passed. The Owen Stanley-, Wharton-, and Albert-Edward chains are all interconnected, while a deep cut [18] separates the Obree chain from the Owen Stanley Range. Mount Victoria, the easternmost elevation of this range is, at the same time, its highest (4337 m.); it runs from east to west without any interruption.

In this elongation the length of the range is 36-40 km. The last spurs in the west are Mt Thynne (2002 m.) and Mt Lilley (2217 m.). A number of round hills that run outwards into a broad valley separates the Owen Stanley Range from Mount Obree.

After Mount Victoria, Mount Albert-Edward, already mentioned, and named by MacGregor after the Prince of Wales, is the highest mountain in British New Guinea. It is about 4250 metres high, unwooded on its highest rocky cone, and covered only with grass. Other high elevations of the Owen Stanley Range are Mt Belford (2000 m.), Mt Musgrave (2393 m.), and Mt Knutsford (3700 m.), Mt Service, Mt Morehead and Mt McIlwraith (3000–3700 m.). The Owen Stanley Range only became better known from its ascent by the then-Governor of British New Guinea in 1888. Mt Suckling was crested for the first time in 1891 as high as 2500 m. The Obree chain had been the goal of expeditions on several occasions; at the beginning of 1871 one was fitted-out by Hunter and Hartmann, and at the end of 1887 another under the leadership of Cuthbertson. The latter reached an altitude of 2700 metres; Hunter and Hartmann on the other hand crested only 2000 metres.

Along the coast between Keppel Point and the level of Port Moresby, there extend further inland firstly the MacGillivray Range and the Astrolabe Range, the highest point of the latter 1080 metres. The Kobio chain has its highest point in the Navarre, Tully, Verjus, and Yule Mountains (3064 m.) the latter having been the goal of expeditions at various times. Still totally unexplored are the Albert Mountains, extending about fifteen kilometres from Freshwater Bay in a

northwesterly direction, and the adjoining Albert-Victor and Sir Arthur Gordon Ranges (about 4000 m.). Also, the country between this range and the Herzog and Cooper mountains on the opposing German side is still totally unknown. In the Aird Hills, about 7°27'33" S., the land rises again up to the Dutch border, to [19] a height of 900–1200 metres. These are very steep elevations, surrounded on all sides by a water canal, and clad in dense scrub and primeval forest. Nothing can be said so far about the geological structure of the mountains of New Guinea, since barely anything is known about them. [20]

IV. Climatology

By Prof. A. von Danckelmann

The location of New Guinea, between 1° and 11° S., requires a real tropical climate that with its uniform temperature and humidity conditions generally corresponds with the East Indian Archipelago, even if — and this is valid especially for the south coast of the big island — the proximity of the Australian continent exerts a somewhat modifying effect, in that somewhat more extreme temperature and humidity conditions make their presence felt there.

The numerical documentation for a characteristic of the climatic conditions of the island is still quite sparse, and what is even worse, its quality and reliability leaves much to be desired. In this direction, it is best ordered for the coastal regions of Kaiser-Wilhelmsland. For British New Guinea, not even the energy of such a superb Governor as MacGregor, so heavily involved in exploration, aided by his officials, has been able to provide any long-lasting, reliable series of observations; and for Dutch New Guinea, apart from a series of observations of Geelvink Bay, only very sparse travellers' notes are available.

Often professional hindrances, and observers' illnesses, combined with indifference towards such tasks, and also ill-will arising out of reasons of convenience, leading to direct falsification of observations in journals, as well as the frequent changes of station personnel due to the still disordered conditions, are the causes of the generally unsatisfactory quality of the meteorological numerical data from our area.

In such an orographically-varied land as New Guinea, despite the general uniformity of the tropical climate, on closer investigation there must of course emerge large local variations in weather conditions, depending on [21] the altitude, and exposure of the respective observation points to the prevailing winds. At the moment, our knowledge of these variations is still minimal.

Turning first to the warmth conditions, the average annual temperature on the coasts of Kaiser-Wilhelmsland amounts to about 26°, but here the warmest month, usually February, has a temperature only about 1.5° higher than the coolest month, which, as a rule is August, whose average temperature is about 25.5°. Over the course of a year the air temperature ranges roughly between 19° and 35°, so that the entire annual variation in warmth is only 16°. Sudden temperature changes do not occur at all. The lowest temperature falls regularly during the early morning hours; after sunrise the thermometer rises rapidly, so that sometimes the highest temperature of the day has already been reached by eleven o'clock in the morning. Then a slight seabreeze usually sets in and tempers the heat. Between four and five in the afternoon the heat begins to decrease noticeably. The evening is mostly refreshing, and almost year-round the nights are made bearable, and even pleasant, by a slight breeze off the land. It is somewhat unusual and, for example in Astrolabe Bay very rarely observed, that a warm seabreeze sets in at night, which instead of cooling, raises the temperature. Under normal conditions, at night the temperature tends to drop to 22°–23°, and to climb during the day to 29°–32°. On average, the daily temperature ranges 8°.

In British New Guinea, where reasonably reliable temperature measurements over several years are available only for Port Moresby, the average annual temperature is apparently somewhat higher, about 27°; the coolest month is, likewise, August (25.3°), however the warmest is December (28.2°). The highest temperature climbs to about 38°; the lowest sinks to 20° or 21°. The annual variation in warmth is therefore about 18°. The greatest daily variations occur during the period of wind change: April–May and October–November.

As for the climatic conditions of the hill-country and high-mountain regions of New Guinea we have only extremely poor information. At the Neudettelsau mission station on the 970 metre Sattelberg near Finschhafen, the Senior of the German evangelizers, Missionary Flierl, had indeed carried out a good series of observations of cloud and rainfall over several years. However, temperature [22] records are available only for the months of May and June 1898. According to these, the temperatures were:

	6 a.m.	noon	6 p.m.
May	20.1°	25.9°	22.4°
June	19.5°	24.8°	21.6°

The station soars into the region of frequent cloud formation, thus the climate is extraordinarily damp, the trees are covered with moss and lichen, the cloud cover is very strong throughout the year. On average, over a year the observer records 115 foggy days, 170 cloudy days, and only 10 hotter days. At these altitudes the climate is indeed far more refreshing than on the coast. However, the excessive humidity promotes a tendency to rheumatic disorders, and this is not quite the same as being totally free of fever, as was learnt from the experiences of 1895, when the inhabitants of the mission station, who had not come down to the coast for a long time, were nevertheless gripped by severe fever. Yet generally this station is spared malarial symptoms.

On the plateaux of the Astrolabe Range in British New Guinea, C. Ferfloth, who stayed there for several months in 1895 and regularly recorded thermometer readings at seven o'clock each morning, observed temperatures of 20.4°–23.5° at an altitude of about 700 metres. We are grateful to MacGregor's journeys into the Owen Stanley Range for what we know of the climate in the high mountains. The moss and cloud zone ended at 2400 metres. There, the temperature amounted to 18°; up to an altitude of 3200 metres fog showed up only occasionally during the day. Further up, a pleasant, more serene climate began, and the bamboo zone. A mighty sea of cloud about 1400 m thick lay 600-700 m lower down, and stretched like a frozen mass of snow in majestic grandeur at the observer's feet. On the highest peak of Mt Victoria (4370 m.) MacGregor found unusual dryness, it did not appear to have rained for weeks. In the early morning the grass was covered with frost and large icicles had formed. The sky was blue and cloudless, even in the afternoon. The temperature was 16–21° during the day, 4–7° at night; a lively wind blew frequently from the south-east. It would seem beyond doubt that snowfalls sometimes occurred on the central mountain ranges of the island, even if a lot of information about this is based on [23] confusion with fixed cloud and fog banks. However, the formation of permanent ice and glaciers seems to get nowhere.

Under the influence of the marked heating experienced by the Australian continent during the southern hemisphere's summer, New Guinea is extracted from the reign of the otherwise-blowing southeast tradewind during this period. In its place comes the northwest monsoon. The duration of the southern tradewind extends as a rule over the five to six months: April or May to October or November. These conditions are somewhat irregular in the northwestern part of the island. According to A.B. Meyer's observations, at Andei in the Arfak Mountains the prevailing east wind dominates from May to November, with fairly dry weather; from December to April it is the southwest or northwest winds, with many rainy days.

Closely related to the prevailing winds is the seasonal distribution of rainfall. New Guinea belongs among those tropical regions where a sharply-defined dry season does not occur as a rule, but where every month is more or less rich in precipitation. The so-called “dry season” has purely the character of a certain reduction in the frequency and intensity of rainfall. Generally, the period when the southeast tradewind dominates, is the poorer for rain and the most pleasant time of the year. The sky is usually slightly overcast; the heat is tempered by the constant movement of air, which is not a nuisance, since only a moderate wind blows. With the onset of the northwest monsoon in November, but sometimes not until January, the real rainy season begins, and then continues into May. Here the rain falls more abundantly virtually everywhere, but in different quantities depending on the location.

Only in some years, especially those, it seems, when the tradewind sets in particularly strongly, there are extended periods of lack of rain. For example in 1895 and 1896 in the Astrolabe Bay region, particularly the area around Stephansort, such a conspicuous drought prevailed around the middle of the year that plantation operations, especially tobacco cultivation, suffered considerable damage and, in relation to health, severe malarial cases made an appearance. On the other hand, towards the end of 1891 in the [24] Port Moresby area an unusual dry period asserted itself, which prompted the administration to bring food aid to the natives who were starving, in part due to their harvest, after a lack of rain had already caused a crisis in the same area in 1886. Even though in New Guinea, as already noted, the time of the N.W. monsoon brings about the actual rainy season, there are very obvious and notable exceptions to this general rule. Where the S.E. tradewind directly hits that coastline that on the other hand is protected by mountain ranges from the N.W. monsoon, and at the same time lies in its wind shadow, there occurs a total reversal of the seasonal rain distribution. Thus the western coastal region of the Huon Gulf, as we see from our observations in Finschhafen, on the Sattelberg, in Simbang and on the Tami Islands, has its main rainy season around mid-year, while the months around the end of the year are significantly poorer for rain. So here, within a short distance, there is a sharp reversal in the annual rainfall distribution, and the rainy seasons are diametrically opposite. The mighty mountain ranges rising in the north of Kaiser-Wilhelmsland and petering out towards Cape King William and towards the Huon Gulf keep the rain-bearing northwest winds from the western coastal areas of the Huon Gulf, that run north–south, while the latter are totally free from exposure to the S.E. tradewind blowing in from the open ocean, which is forced to climb the coastal mountains and release moisture. The border of these two zones with such opposed rain conditions could be sought on the coast near Fortification Point.

Yet not only the seasonal distribution, but also the amount of annual precipitation in New Guinea is very dependent on the orographic conditions around the station concerned.

For example, the area around the Astrolabe plain has quite striking differences in annual rainfall, which are dependent on the prevailing wind direction striking the coast and the coastal mountains. The area around Alexishafen has a higher rainfall than that around Friedrich Wilhelmshafen, which in turn is damper than the areas of Konstantinhafen and Stephansort, while apparently the west coast of Astrolabe Bay [25] receives more rain from the S.E. tradewind than the protected area of Stephansort, lying in the wind-shadow of the Finisterre Range and, even more so, the area of Konstantinhafen. As far as the sometimes different periods of observation permit a comparison, the distribution is shown by the following values.

The average annual rainfall is:

in Konstantinhafen	3072 mm
in Erima	3227 mm
Stephansort	3340 mm
in Friedrich-Wilhelmshafen	3778 mm

In the very rainy year of 1893, the annual amount of precipitation was

in Konstantinhafen	3072 mm
in Erima	3562 mm
in Maraga	6558 mm
in Jomba somewhat more than	5575 mm
in Friedrich-Wilhelmshafen somewhat more than	4596 mm

Whether the observations in Maraga are accurate remains to be seen; they seem too high.

Practical experience has also taught that the plantation district of Jomba, close to Friedrich-Wilhelmshafen is, for this reason, suitable for the cultivation of tobacco, like the area of Erima and Konstantinhafen, because the ruinous droughts which, as we have already seen, manifest themselves during the reign of the S.E. tradewind in odd years in Astrolabe Bay, are much less pronounced here. Acknowledgement of this fact strikingly proves once again the great benefits of careful rainfall measurements for all tropical plantation enterprises.

Among the rainiest areas of Kaiser-Wilhelmsland is the northwest coast of the Huon Gulf. The annual average in Simbang is 4862 mm; on the Sattelberg 4560 mm; and 6533 mm on Tami. That last area has the greatest rainfall of the entire island, as far as observations go. Rainfalls of 1430 mm in a month occur here.

However the relatively great variations in annual rainfall is characteristic of the entire island, even more so the variation for the same month in different years. For example, in 1898 on Tami 1129 mm was recorded in August, but in the same in 1896 only 113 mm fell — ten times less. [26]

The following is a brief summary of the seasonal distribution of rainfall from a wide variety of locations for which rainfall measurements are available:

	Dore-hafen %	Hatzfeldthafen %	Friedrich-Wilhelmshafen %	Jomba %	Maraga %	Erima %	Stephansort %	Konstantin-hafen %	Finschhafen %	Sattelberg %	Simbang %	Tami %	Port Moresby %	Samari %	Mabudauan Daru Island %
December-February	**36**	**38**	29	26	**30**	**36**	**40**	**40**	9*	10*	12*	14*	30	14*	**32**
March-May	29	29	**33**	**37**	27	35	30	31	20	21	22	27	**43**	18	27
June-August	20	12*	15*	22*	18	11*	8*	10*	**45**	**40**	**40**	**34**	16	**42**	15*
September-November	15*	21	23	25	15*	28	22	19	26	29	26	25	11*	26	26
Annual total in mm	2145	2741	3778	5591	6558	3227	3340	3072	2730	4560	4862	6533	1261	3214	1893

This compilation shows that the south coast is decidedly drier than the north coast, that Kaiser-Wilhelmsland belongs among the areas of the island considered the best-endowed with rainfall, and that the seasonal distribution of rainfall is extremely variable and depends on local conditions. In any case it cannot be said that the rainy season of the north coast is directly the opposite to that of the south coast.

What the situation is, regarding the seasonal distribution of rainfall in the interior of the island, we have virtually no information. For Kaiser-Wilhelmsland we have to rely on the meagre perceptions provided by the few expeditions that have penetrated the interior. In the first navigation of the lower reaches of the Empress Augusta River by the steamer *Samoa* in April 1886 flooding was encountered. During the second voyage on the river at the end of July and the beginning of August 1886, a drop of 6–7 metres in the river level during the intervening period was recorded at the flood markers. During the 1887 voyage on the river by the scientific expedition

led by Dr Schrader, it turned out that during the period between the end of June and the beginning of November, during which the expedition stayed in the river basin, in July full rainy season prevailed; in particular, a lot of rain fell during the night with numerous thunder storms. In August the transition from rainy to dry season asserted itself, but thunder storms still often arrived in the evenings. While the river rose about three metres during the first ten days of July, it later fell slowly. At the "Malu camp", in the middle reaches, between 22 August and 4 October the river level varied around 3.5 metres. [27]

Through the Augusta River expedition under Dr Schrader we have the only extended, reliable weather observations from the interior of Kaiser-Wilhelmsland. The expedition stayed for more than two months, from the end of August to the beginning of November 1887, in the so-called "Malu camp" (4°11' S., 142°56' E.). Since the results of these observations have not been published so far, we will look at them in somewhat greater detail.

During July and August the following results with respect to the precipitation conditions were recorded at various points above-, below-, and right at the Malu camp.

Number of days with:

1887	Rain	Thunder storms	Sheet lightning only
July	19	13	7
August	11	13	7

During July the rain storms were often very violent, less so in August.

Air movement was generally very slight. Usually calm prevailed mornings and evenings; during the day quite gentle southwest – northwest winds, very rarely northeast winds.

1887	Air temperature								Cloud				Rainfall in mm			Number of days with		
					Average		Absolute											
	7 a.m	2 p.m.	9 p.m.	Mean	Max.	Min.	Max.	Min.	7 am	2 pm	9 pm	Mean	7 am	9 pm	Total	Rain	Thunderstorms	Sheet lightning only
Sept.	24.3°	30.0°	25.2°	26.2°	—°	—°	—°	—°	8.2	6.6	7.9	7.6	(140.1)	(62.2)	(202.3)	23	10	6
Oct.	23.9°	30.1°	25.2°	27.1°	30.8°	23.1°	32.8°	20.2°	7.9	5.8	6.4	6.7	92.7	75.1	167.8	18	14	7
Simultaneous observations at Hatzfeldthafen on the coast gave the following results:																		
Sept.	24.1°	30.3°	24.7°	25.9°	—°	—°	—°	—°	6.9	6.9	5.2	6.3	—	—	145	9	4	10
Oct.	24.3°	30.3°	24.7°	26.0°	32.0°	21.5°	33.5°	19.7°	6.4	5.2	4.4	5.3	—	—	149	12	7	3

Rainfall recording began only on 8 September. Since very heavy rain fell at some time every day during the first seven days, the total rainfall for the month was certainly more than 300 mm.

The river level rose from 28 August, according to the daily measurements at the established level of 40 cm, until 24 September — very rapidly during the first weeks — as high as 475 cm, roughly more than four metres, and then fell fairly steadily until 21 October as low as 225 cm, and on 5 November, when observations had to be broken off, the river level had returned to 291 cm.

These measurements suggest that in the river basin of this [28] river at this season, at least in 1887, one can hardly of even a relative drought, at the most, August could be considered as such. This might be supported by the fact that at the end of August the words "haze", "high-level smoke", and "red sun" are noted several times in the meteorological journal. From experience in other tropical areas this situation could be created by grass and forest fires, which would be lit naturally by the natives for their agricultural activities only in the driest season.

The experiences of the Ramu expedition under Dr Lauterbach during the months of June to August 1896 had shown that inland from Astrolabe Bay, while quite a pronounced drought prevailed on the coast, a fairly large volume of rain fell, almost without exception during the afternoon and evening hours. It was occasionally very heavy rain, and not uncommonly accompanied by thunderstorms. The southeast tradewind made its presence clearly felt.

During the second Ramu expedition, from the middle of April to the beginning of September 1898, flooding was encountered in April; furthermore the water level rose and fell irregularly, however its falls prevailed. From 9 to 15 August the river rose 3.3 metres suddenly; then to drop 2.7 metres up until 24 August. Rain and thunderstorms were not uncommon.

Summarizing the result of these perceptions, it is evident that in the river basin of these, the two biggest rivers in Kaiser-Wilhelmsland, no pronounced dry seasons occur, in any event, but the main rainy season is in the first half of the year. However, in the mountainous regions that are the sources of these rivers, even in the low-rainfall season there must be brief tremendous downpours, which, during the lower water levels must themselves cause temporary significant rises in water level, so that this is very intermittent and changeable.

It is peculiar to the northeast coast of New Guinea that most of the rain falls during the night. The Russian explorer, Maclay, who made an extended stay at Astrolabe Bay on two separate occasions, found that in the 1871–72 observation period rain had fallen only 33 times during the day but on the other hand 128 times at night. On average, over a period of three years, rainfall distribution by day and by night is as follows: [29]

	Fr.Wilhelmshafen	Erima	Stephansort	Konstantinhafen	Sattelberg	Simbang	Tami
Rain by day	11%	10%	18%	25%	42%	36%	36%
Rain at night	89%	90%	82%	75%	58%	64%	64%

In the Bismarck Archipelago on the other hand, the distribution is reversed. There, about 55% falls during the day and 45% at night. While usually the rains come down in short, more or less heavy downpours, there are also sometimes periods where the rain falls almost uninterrupted for several days. For example, from 24 June until 7 July 1896 at the stations on the Huon Gulf it rained almost continually day and night, not in strong downpours but as light drizzle, which was interrupted roughly every half hour by one to two minutes of heavy showers.

Thunderstorms are not common in coastal regions of Kaiser Wilhelmsland for tropical conditions. From the available statistics, which here and there are perhaps relevant only to more recent thunderstorms, 50–60 days of thunderstorms could be expected each year, and also 40–80 days with merely lightning.

It is peculiar to the coast that, regardless of whether the main rainy season falls at the turn of the year or in the middle of the year, thunderstorms are consistently rarest between the months of May and September. Thunderstorms at night are everywhere much more common than those during the day; most often they come from a northwest to a northeastly direction.

Their strength is usually low on the coast. In the interior they seem to be much more common and, indeed, at all times of the year, as the experiences of the above-mentioned river expeditions have shown. There the stormy winds accompanying the thunderstorms also seem to be quite violent sometimes. For example, on 2 July 1887 the Empress Augusta River expedition witnessed a thunderstorm with such strong wind gusts that in the forest along the river whole rows of strong trees were snapped.

Earthquakes are not too common in Kaiser-Wilhelmsland, in turn more rare on Astrolabe Bay and usually less strong than in the vicinity of Finschhafen; in any event not so strong and frequent as those on the volcanic Gazelle Peninsula of New Britain. Since from experience the earthquakes very often occur at night, they not uncommonly also escape detection, especially when

they are weak. In the Astrolabe plain, from experience of the years 1894–97 one would have expected an average [30] of six earth tremors of a more noticeable kind per year; in the Finschhafen region about twenty.

In conclusion, what follows is a summary of all the rainfall measurements recorded at the permanent stations in Kaiser-Wilhelmsland since the German occupation, based on a new revision of them at the hands of the original tables — which have also been supplemented — with the elimination of several errors and misprints in earlier publications. Incomplete monthly rainfall totals, as a result of whatever circumstances, are printed in italics. The value of these figures is, as already mentioned, probably quite varied however, because of a frequent change of observers. It is subsequently very difficult to separate the wheat from the chaff, since good and substandard monthly observations alternate with one another with the exception of the mission stations, where information was scrupulously recorded throughout. In general, the average of the series of observations is expected to come fairly close to the actual conditions. Only the series of observations from Maraga, brief in themselves, give serious cause for concern. Possibly, measurements had been recorded there with an inaccurate measuring glass.

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hatzfeldthafen													
Rainfall in mm													
1886	—	—	—	189	109	44	103	44	29	153	142	294	—
1887	191	378	52	285	221	82	177	13	145	149	210	238	2141
1888	237	295	336	626	28	37	66	10	2	0	273	271	2181
1889	476	507	340	*294*	105	39	168	59	158	206	476	*441*	*3269*
1890	622	219	290	289	160	109	—	136	84	286	433	251	—
1891	515	—	—	540	126	166	381	276	295	—	—	—	—
Mean	**408**	350	255	371	125	79*	179	90	119	159	307	299	2741
Number of rainy days													
1886	—	—	21	16	12	7	10	9	4	11	13	18	—
1887	15	19	13	19	14	9	14	6	9	12	12	12	154
1888	20	15	25	20	6	3	—	—	1	0	9	4	—
1889	15	15	11	7	15	7	10	11	12	13	16	—	—
1890	19	16	15	14	7	**9**	—	11	7	14	14	12	—
1891	17	—	—	16	8	2	16	18	17	—	—	—	—
Mean	**17**	16	17	15	10	6	12	11	8	10	13	12	147

Friedrich Wilhelmshafen

Rainfall in mm

	January	February	March	April	May	June	July	August	September	October	November	December	Year
1891	—	—	—	—	—	—	—	—	—	—	—	371	—
1892	485	—	524	186	158	—	—	162	234	328	842	431	—
1893	194	323	317	449	594	474	340	249	381	*269*	429	577	*4596*
1894	242	427	279	396	397	242	178	180	132	254	373	243	3343
1895	352	418	349	488	421	130	53	23	123	296	251	619	3523
1896	362	330	379	544	415	75	188	151	87	130	366	—	—
1897	283	431	487	563	198	57	—	219	122	262	—	—	—
1898	398	119	432	845	265	129	136	316	43	—	—	—	—
Mean	331	341	395	**496**	350	184	179	186	160*	256	452	448	3778

Number of rainy days

1891	—	—	—	—	—	—	—	—	—	—	—	20	—
1892	21	—	17	12	13	—	—	16	17	18	25	24	—
1893	12	20	17	22	26	18	19	15	16	—	17	19	—
1894	17	21	19	26	24	22	22	18	21	15	27	21	253
1895	27	26	22	21	24	14	**7**	6	12	19	19	28	225
1896	23	21	28	26	24	13	13	**11**	7	10	11	—	—
1897	25	27	26	21	11	12	9	9	13	19	—	—	—
1898	26	21	31	29	30	19	18	21	8	—	—	—	—
Mean	22	23	23	22	22	16	15	14	13	16	20	22	228

Jomba

Rainfall in mm

1892	—	350	—	126	—	—	—	—	—	—	—	467	—
1893	276	390	368	450	*746*	504	356	280	462	431	514	798	5573
1894	366	746	483	565	664	674	—	—	—	—	—	—	—
Mean	321	495	425	380	**705**	589	356	280*	462	431	514	633	5591

Number of rainy days

1892	—	14	—	11	—	—	—	—	—	—	—	18	—
1893	13	18	16	13	16	21	20	15	22	21	22	21	218
1894	15	20	20	20	19	23	—	—	—	—	—	—	—
Mean	14	17	18	15	17	22	20	15	22	21	22	20	223

Maraga

Rainfall in mm

1892	—	—	—	—	—	—	—	—	—	481	682	655	—
1893	464	504	549	694	528	600	568	258	474	331	912	676	6558
1894	652	980	684	580	489	55	—	—	—	—	—	—	—
Mean	558	**742**	616	637	509	328	568	258*	474	406	797	665	6558

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Number of rainy days													
1892	—	—	—	—	—	—	—	—	—	16	18	22	—
1893	18	15	22	19	17	13	18	9	13	8	16	19	187
1894	22	18	12	18	16	5	—	—	—	—	—	—	—
Mean	20	16	17	19	16	9	18	9	13	12	17	21	187

Erima

Rainfall in mm

1891	—	—	—	—	—	—	—	338	88	208	—	223	—
1892	—	—	—	—	—	—	—	—	—	—	—	384	—
1893	185	294	432	376	271	244	212	165	122	270	534	457	3562
1894	540	292	197	365	292	72	143	73	83	84	395	429	2965
1895	333	385	338	451	218	62	16	14	87	130	164	408	2606
1896	395	—	—	—	—	—	—	—	—	—	—	—	—
1897	—	686	795	310	—	55	146	0	90	107	277	348	—
1898	504	330	458	482	360	99	99	153	21	—	—	—	—
Mean	391	397	**444**	397	285	106	123	124	82*	160	343	375	3227

Number of rainy days

1891	—	—	—	—	—	—	—	22	17	17	—	28	—
1892	—	—	—	—	—	—	—	—	—	—	—	29	—
1893	23	25	30	24	26	13	12	9	8	8	16	23	217
1894	28	16	18	22	19	7	15	11	7	6	20	20	189
1895	16	22	20	15	12	12	3	5	9	8	14	15	151
1896	17	—	—	—	—	—	—	—	—	—	—	—	—
1897	—	24	21	9	—	3	6	0	2	10	19	12	—
1898	21	17	19	17	12	7	10	11	2	—	—	—	—
Mean	21	21	21	17	17	8	9	10	7	10	17	21	179

Constantinhafen

Rainfall in mm

1886	—	—	—	—	—	—	—	105	125	367	313	353	—
1887	286	693	551	333	293	106	291	55	174	133	267	403	3585
1888	284	205	876	583	50	3	35	11	29	66	103	171	2416
1889	368	388	—	178	225	72	126	41	131	162	114	409	—
1890	358	440	392	266	103	187	—	90	139	390	—	409	—
1891	395	460	—	426	102	—	296	178	65	259	209	262	—
1892	800	540	266	196	209	167	20	143	145	203	472	464	3625
1893	326	566	284	260	142	182	201	46	131	94	264	486	2982
1894	810	231	338	340	351	144	37	24	31	50	517	559	3432
1895	448	243	445	196	165	54	12	9	109	232	208	471	2492
1896	207	384	—	—	—	—	—	—	—	—	—	—	—
Mean	428	415	**450**	309	182	114	127	70*	108	196	274	399	3072

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Number of rainy days													
1886	—	—	—	—	—	—	—	11	12	17	19	19	—
1887	13	20	20	20	19	9	14	4	14	12	18	17	179
1888	25	23	30	25	7	4	4	2	3	5	9	9	146
1889	25	20	—	7	12	2	5	6	6	16	12	22	—
1890	19	18	16	9	3	5	—	7	6	15	—	12	—
1891	17	19	—	25	17	—	16	16	8	26	22	20	—
1892	27	23	17	6	7	6	3	8	8	8	13	13	139
1893	21	19	21	16	15	10	12	4	8	7	12	19	164
1894	19	14	9	15	11	4	4	5	4	5	20	19	129
1895	21	15	15	19	21	15	8	6	12	12	14	17	175
1896	10	14	—	—	—	—	—	—	—	—	—	—	—
Mean	20	20	17	19	12	7	8	7	8	12	15	17	158
Stephansort													
Rainfall in mm													
1892	—	—	349	—	—	—	—	—	—	—	—	667	—
1893	—	332	435	373	124	—	—	107	132	215	648	565	—
1894	806	418	292	280	234	101	57	58	78	104	361	379	3168
1895	485	413	425	322	344	126	19	21	105	142	194	456	3052
1896	366	416	549	272	281	58	16	65	119	134	292	393	2961
1897	389	490	582	315	96	185	114	156	337	314	665	328	3971
1898	411	214	—	428	224	—	183	52	11	—	—	—	—
Mean	**491**	381	439	332	217	117	78	76*	130	182	432	465	3340
Number of rainy days													
1892	—	—	23	—	—	—	—	—	—	—	—	28	—
1893	—	21	16	11	12	—	—	5	7	7	13	24	—
1894	25	19	21	22	18	14	15	14	9	8	21	24	210
1895	24	19	24	14	14	10	5	8	8	8	11	14	159
1896	19	17	23	20	11	9	4	4	4	9	12	16	148
1897	17	20	28	19	21	19	13	11	9	12	18	14	201
1898	19	13	—	16	11	—	8	5	4	—	—	—	—
Mean	21	17	22	17	14	13	9	8	7	9	15	20	172
Finschhafen													
Rainfall in mm													
1886	—	—	—	—	—	151	660	459	141	229	209	64	—
1887	19	226	61	35	184	343	339	781	479	144	221	58	2860
1888	90	24	182	332	262	186	473	149	288	20	183	68	2338
1889	192	94	121	147	506	449	746	587	439	320	152	183	3936
1890	26	33	134	138	151	393	141	347	205	214	69	71	1922
1891	47	—	—	—	—	—	—	—	—	—	—	—	—
Mean	75*	94	124	138	276	298	**472**	465	310	222	167	89	2730

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Number of rainy days													
1885	—	—	—	—	—	—	—	—	—	—	—	22	—
1886	13	7	14	—	—	15	14	21	15	16	19	16	—
1887	4	16	12	8	20	20	23	26	28	15	19	13	204
1888	14	7	16	16	14	22	22	14	18	14	11	6	174
1889	12	7	8	11	23	13	18	19	11	13	7	14	158
1890	9	8	6	15	7	11	14	13	13	11	6	6	119
1891	5	—	—	—	—	—	—	—	—	—	—	—	—
Mean	9	9	11	13	16	16	18	19	17	14	12	11	165

Simbang

Rainfall in mm

1894	—	—	—	—	—	—	—	—	312	199	354	220	—
1895	103	111	86	184	660	901	661	552	842	645	513	192	5450
1896	142	16	220	343	662	476	420	397	354	363	685	229	4307
1897	78	132	290	640	502	901	559	670	524	243	216	160	4915
1898	74	10	141	282	314	—	—	1001	219	—	—	—	—
Mean	99	67*	184	362	535	**759**	547	655	450	362	442	400	4862

Number of rainy days

1894	—	—	—	—	—	—	—	—	18	16	23	13	—
1895	13	18	14	20	23	27	27	25	20	20	18	17	242
1896	17	6	20	25	27	24	27	22	24	16	16	16	240
1897	11	19	21	20	24	27	21	25	24	15	17	19	243
1898	13	7	18	18	13	—	—	23	15	—	—	—	—
Mean	13	13	18	21	22	26	25	24	20	17	18	16	233

Tami

Rainfall in mm

1896	—	54	422	364	665	630	488	143	368	827	705	571	—
1897	304	396	641	915	981	1240	596	506	502	348	460	364	7253
1898	161	170	229	596	457	588	1130	1429	476	—	—	—	—
Mean	233	207*	431	625	701	**819**	738	693	449	587	583	467	6533

Number of rainy days

1896	—	8	22	15	26	27	25	17	22	23	23	23	—
1897	17	23	25	25	28	30	—	—	—	—	24	26	—
1898	11	10	17	22	23	26	30	27	19	—	—	—	—
Mean	14	17	21	21	26	28	27	22	21	23	23	24	267

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Sattelberg													
Rainfall in mm													
1894	—	—	—	—	—	—	—	—	—	261	286	273	—
1895	130	114	215	213	600	1011	520	475	817	410	266	251	5022
1896	115	48	178	401	868	452	946	365	421	717	263	175	4949
1897	124	164	389	627	353	880	469	660	781	202	259	208	5116
1898	88	81	137	226	159	216	759	—	—	—	—	—	—
Mean	114	102*	105	367	495	640	**671**	500	673	397	269	227	4560
Number of rainy days													
1894	—	—	—	—	—	—	—	—	—	15	21	20	—
1895	20	21	22	22	27	28	29	25	26	25	21	20	286
1896	21	13	24	21	27	23	27	23	20	22	15	16	252
1897	14	14	24	23	25	28	23	24	21	15	23	22	256
1898	23	18	24	24	15	26	26	—	—	—	—	—	—
Mean	20	17	23	23	24	26	26	24	22	19	20	19	263

V. Vegetation and Useful Plants of New Guinea

Prof. O. Warburg

The vegetation of New Guinea is exceedingly rich. Few areas in the tropical belt are likely to be in a position to compete with New Guinea in terms of diversity of plant forms and magnificence of their proportions: in Asia probably only Borneo, Sumatra, and the Malayan Peninsula; in Africa perhaps Cameroon and Gabon; in the Americas the Amazon region and possibly Central America. Another salient feature of the botany of this island is the large number of floral elements peculiar to it, a consequence of the clearly age-old isolated location of New Guinea.

Nothing illustrates this ancient isolation more clearly than a comparison of the vegetation with that of northern Australia, pointing for example to the still mostly tropic conditions of the colony of Queensland. Even the impartial visitor who is not possessed of botanical knowledge finds himself displaced as into another world when he travels for example from Astrolabe Bay to Cooktown; he leaves a country totally covered with dense, primeval, tropical forest, interrupted only here and there by a little patch of grassland: the landscape imparts an extremely grave impression. In Cooktown he finds the broad eucalyptus savannah, an endless grassy landscape usually quite-densely planted with pale-leaved trees that cast little shade, and are seemingly forest-like, abruptly interrupted only on the damp slopes of the mountains and into the valley floors by gloomy high forest. [37]

As sharply as this difference appears to be, to the layman, in reality it is not, since in New Guinea too there are found grasslands covered with eucalypts, even though, as far as we know, only to a relatively limited extent on the south side of the island, where the rain-bearing southeast tradewind reaches the island markedly dampened via Cape York Peninsula opposite. But even then the vast difference between Australia and New Guinea must be seen when one compares like with like, when one contrasts the Australian savannah and the New Guinea savannah, the Australian virgin forest and the New Guinea virgin forest.

The Australian savannah, that of North Queensland, is far superior to the savannah of New Guinea not only in relative extent, but also in the infinitely greater richness of composition of her plant species. Admittedly, no real botanist has explored the savannahs of New Guinea, but still, the collections of the Italian traveller d'Albertis from the Fly River, and that of the English governor MacGregor from the Mai-Kussa or Baxter River, one of the delta arms of the Fly River, have shown the situation clearly enough already. Three species of eucalyptus and an equal number of acacias all belonging to the group in which the leaf function is taken over by the leaf-like, widened petioles (*Phyllodium sp.),* by and large make up the forest cover of the New Guinea savannah. Of the acacias, one is not definitely determinable, while the others (*Acacia simsii* and *A. holosericea*) are Australian species. Similarly, of the eucalyptus species, at least two (*Eucalyptus tereticornis* and *E. terminalis*) are Australian forms and the third (*Eucalyptus papuana*) is at the least uncommonly close to an Australian species (*Eucalyptus clavigera*); likewise the bush- and herbaceous vegetation of the savannah is almost entirely Australian. So far we know of the Myrtaceae *Metrosideros paradoxa*, *Tristania suaveolens*, *Melaleuca symphyocarpa*; the Rutaceae *Halfordia drupifera*; the Proteaceae *Banksia dentate*; the Polygonaceae *Muehlenbeckia rhyticarya* and *Muehlenbeckia gracillima*; the Papilionaceae *Kennedia retusa*; an Australian sundew *Drosera petiolaris*; the Loganiaceae *Mitrasacme elata*; the Apocynaceae *Alyxia spicata*; the Liliaceae *Xerotes banksia* and *Schelhammera multiflora*; the Haemodoraceae *Haemodorum coccineum*; and the grass *Eriachne squarrosa*. This vegetation consists almost exclusively of plants in common with northernmost [38] Australia, in particular Cape York Peninsula. Given the short distance of the Torres Strait, and the southeast tradewind that prevails for half the year and sweeps over the York Peninsula before it touches the savannah region of New Guinea, it is no wonder that

Australian plants participate in settling the new delta region of the Fly River. This migration is further precipitated by the islands lying in Torres Strait, which, as appearance taught the author, floristically belong totally to Australia. (The author visited Thursday Island, whose vegetation consists of grasslands, eucalyptus savannah, and somewhat-Australian bush, but also, the northerly Jervis Island seems to possess a similar vegetation, as demonstrated by the plants *Hybanthus enneaspermus*, *Stackhousia viminea*, *Candollea uliginosa* collected there by Chalmers). This entire savannah formation of the Fly River delta is therefore to be regarded as an Australian interloper. Originally these were all alien forms, as it seems, without more intensive admixture of the innate New Guinea elements. Probably this formation also includes the New Guinea sandlewood, whose origin we still do not know, but whose export is a major feature: over 1894-1895 nothing was exported; in 1895–1896 for about 80,000 Marks; 1896–1897 for 46,000 Marks, exclusively from British New Guinea.

Also, beyond this savannah area some Australian species have found their way to New Guinea, but if you disregard the denizens of the higher mountain tops (the so-called alpine vegetation), exclusively in the regions of British New Guinea near the coast and mostly in localities where wind direction and the closeness of Australia greatly favoured this immigration. The number of Australian species themselves is, however, so low [39] that anyone who knows the migratory ability of plants must wonder to the highest degree.

(I was able to have only the following identified, almost exclusively from determinations by Ferdinand von Müller, until a short time ago the greatest authority on Australian flora, so that this information is reliable: *Arthropodium strictum*, *Hypoxis hygrometrica*, *Chionachne cyathopoda*, *Deeringia altissima*, *Euxolus interruptus*, *Polycarpaea spirostylis*, *Grevillea gibbosa* (Strickland River), *Mollinedia huegeliana* (probably hardly correct, according to Perkins' work), *Eupomati laurina*, *Capparis quinifolia*, *Psoralea archeri*, *Hibiscus notho-manihot*, *Cochlospermum gillivrayi*, *Pimelea cornucopiae*, *Panax murrayi*, *Modecca australis*, *Jasminum aemulum*, *Maesa haplobotrys*, *Clerodendron tracyanum*, *Gmelina macrophylla*, *Josephinia grandiflora*, *Oldenlandia auricularia*, *Gymnanthera nitida*, *Vittadinia brachycomoides*. Australian forest plants found in d'Albertis' collection from the Fly River were *Elaeocarpus arnhemicus*, the Araliaceae *Kissodendron australianum*, and the palm *Kentia wendlandiana*. We can add the mountain plants of Australian origin that are found in the Owen Stanley Range: *Epilobium pedunculare*, *Galium australe*, *Lagenophora billardierii*, *Styphelia montana*, *Euphrasia brownii*, *Myosotis australis*, *Sisyrinchium pulchellum*, *Astelia alpina*, *Carpha alpina*, *Carex fissilis*, *Uncinia riparia*, *Uncinia hookerii*, *Agrostis montana*, *Danthonia penicillata*, *Festuea pusilla*, as well as the few Australian species probably not correctly determined, apart from the two grasses, (*Faradaya splendida*, *Smilax australis*, *Dianella caerulea*, *Leptaspis banksii*, *Paspalum parviflorum*), we have enumerated virtually all of the exclusively Australian species discovered so far in New Guinea, 62 in total, a small number when compared with the species jointly shared only with the Malay Peninsula).

This is, in fact, one of the most striking phytogeographical phenomena, which can be explained only by the power of tropical forest, to destroy relentlessly everything that does not adapt to the conditions of the tall forest and is therefore unable to integrate into the forest's plant community. With increasing cultivation and forest eradication in British New Guinea it will soon be different, because birds and wind certainly transport seeds from Australia every day, and since the climatic conditions of the York Peninsula and the coast of New Guinea opposite are hardly very different.

What a contrast to the savannah flora is that shown by the high- or jungle flora of New Guinea and Australia. In terms of plant richness and species, our island by far outweighs northern Australia. Despite that continent being far more extensively studied, the plant life of Australia's tropical forest is downright meager when compared with the overwhelming abundance of species

in New Guinea. However, an essential difference to the savannah is seen here. The high forest of Queensland is by no means a poor imitation, and even less an extract of that of New Guinea, but, despite a relative poverty, it is very rich in its own species; the greater part of the real jungle species are strictly Australian, only very few of these hundreds of species of trees also exist in New Guinea; indeed if one goes through the species common to both areas individually, one will find, to their great astonishment in most cases, that there are species with a very wide distribution from the Malay archipelago, largely those whose fruits have a special buoyancy (for example *Cynometra ramiflora*, *Aleurites triloba*, *Parinarium griffithianum*), as not to mention the actual [40] components of the coastal forest (*Barringtonia speciosa*, *Hibiscus tiliaceus*, *Thespesia populnea*, *Heritiera litoralis* etc.), as well as mangrove vegetation, which is of course virtually identical on both coasts. Hardly any of the tree species occurring in Australia's tropical forest is more abundant there than in New Guinea, mostly in a much lower number of species. A characteristic example is the genus *Myristica*, which supplies the nutmeg trade. In contrast to one or two Australian species, over thirty species are known already from New Guinea, in addition to three other Myristicacean genera occurring mainly in the Malay area, that are totally absent from Australia.

(Likewise, the Dilleniaceae genus *Saurauja*, which has at least twenty representatives in New Guinea, is represented by only one in Australia; also the genus *Canarium* has only one Australian species. In Australia the forest-loving family of Gesneriaceae has only four representatives, belonging to four different genera, while they are extremely abundant in New Guinea, particularly the genus *Cyrtandra*. The Anonaceae have only nineteen representatives in Australia; the Scitamineae eleven; the Piperaceae ten; the Flacourtiaceae and Melastomaceae seven; the Guttiferae and Samydaceae three; the Connaraceae two; while the Balsaminaceae, Begoniaceae, Chlorantaceae, Ternstroemiaceae, Dastiscaceae and the like, as well as the oaks are totally absent. Conversely, the typical Australian families are, for the most part, not represented at all or only weakly by single or a few species. For example, not at all: the Tremandraceae, the Frankeniaceae, Stackhousiaceae, the Myoporaceae, the Phytolacceae, the Utriculariaceae, the Balanopsaceae, the Xyridaceae, the Restiaceae (*Restio pilisepalus* from Waigiu is a Cyperaceae, according to Masters); in single species: the Droseraceae, Pittosporaceae, Violaceae, Zygophyllaceae, Casuarinaceae, Aizoaceae, Thymelaeaceae, Saxifragaceaen, Haloragidaceae, Santalaceae, Proteaceae, Candolleaceae, Goodeniaceae, Epacridaceae, Haemodoraceae, Iridaceae, also the Australian genera of Myrtaceae, Leguminosae, Rutaceae, as well as the big Australian Dilleniaceae genus *Hibbertia*. Also, a number of tropical forest species in Australia are absent from New Guinea: for example, from the families of Monimiaceae (*Daphnandra*, *Palmeria*, *Doryphora*); Anonaceae (*Fitzalania*); Menispermaceae (*Leichhardtia*, *Pleogyne*, *Adeliopsis*); Malvaceae (*Lagunaria*); Olacaceae (*Phlebocalymna*); Meliaceae (*Hedraianthera*); Celastraceae (*Denhamia*, *Caryospermum*, *Siphonodon*); Rhamnaceae (*Dallachya*, *Emmenospermum*); Sapindaceae (*Diploglottis*, *Castanospora*); Leguminosae (*Podopetulum*, *Castanospermum*, *Archidendron*); Saxifragaceae (*Callicoma*, *Gillbeea*, *Davidsonia*); Combretaceae (*Macropteranthes*); Araliaceae (*Mackinlaya*, *Motherwellia*); Rubiaceae (*Abbottia*, *Hodgkinsonia*); Sapotaceae (*Hormogyne*); Bignoniaceae (*Diplanthera*); Palmaceae (*Hydriastele*); Cycadaceae (*Bowenia*, *Macrozamia*), and a very large number indeed of mostly savannah-inhabiting species: the Myrtaceae, Proteaceae, Santalaceae and other families.) [41]

From all these facts it is sufficiently clear, and this is important for understanding the vegetation conditions of New Guinea, that New Guinea, in a floristic context, is by no means the satellite of the neighbouring continent of Australia, but is populated by its own floral elements, completely distinct from the Australian elements. Where the separating sea is narrow, particularly where the Torres Strait is at its narrowest point, some Australian savannah elements have tried to cross over, only, as it seems, again and again to be soon subjected to the struggle with the forest.

Ferdinand von Müller, the deceased botanist for the administration of the Australian colony of Victoria has enumerated probably fifty-seven genera of phanerogams occurring in New Guinea, which as he states, have their greatest spread in Australia. However, he has let himself clearly be guided by the desire to make the relationship with New Guinea appear as closely as possible with his principal field of work. On the one hand he has included in the list the genera of the Jervis Islands in Torres Strait evidently belonging to the Australian region, on the other hand he has counted a number of very widespread and not specifically Australian genera (*Araucaria*, *Aristotelia*, *Drimys*, *Mühlenbeckia*, *Acacia*, *Gaultheria*, *Coprosma*, *Vittadinia*, *Lagenophora*). Finally, he has even attached two genera (*Libocedrus* and *Carpodotus*) that do not occur in the real Australia — *Carpodotus* only in New Zealand and *Libocedrus* there and even in America. Of the enumerated fifty-seven genera only ten are exclusively Australian (*Eupomatia*, *Halfordia*, *Brassaia*, *Kennedia*, *Fenzlia*, *Osbornia*, *Anthobolus*, *Banksia*, *Trochocarpa*, *Patersonia*, *Haemodorum* (we add *Schelhammera*); a further eight besides are encountered in New Zealand or New Caledonia but otherwise not in Polynesia (*Xanthostemon*, *Quintinia*, *Ackama*, *Pimelea*, *Grevillea*, *Olearia*, *Xerotes*, *Arthropodium*); twenty-four occur also in the Malay Archipelago, India, or China, therefore in Asia (*Drimys*, *Flindersia*, *Hearnia*, *Acacia*, *Eucalyptus*, *Melaleuca*, *Tristania*, *Drapetes*, *Haloragis*, *Stackhousia*, *Notothixos*, *Lagenophora*, *Mitrasacme*, *Gymnanthera*, *Alyxia*, *Diplanthera*, *Josephinia*, *Gaultheria*, *Styphelia*, *Phyllocladus*, *Libocedrus*, *Corysanthes*, *Gahnia*, *Leptaspis*); fourteen genera even extend to America (*Drimys*, *Mollinedia*, *Aristotelia*, *Mühlenbeckia*, *Acacia*, *Azorella*, *Gaultheria*, *Vittadinia*, *Lagenophora*, *Araucaria*, *Libocedrus*, *Astelia*, *Carpha*, *Uncinia*); twelve have also spread into central and northern Polynesia (*Mühlenbeckia*, *Acacia*, *Acaena*, *Coprosma*, *Vittadinia*, *Lagenophora*, *Alyxia*, *Faradaya*, *Araucaria*, *Astelia*, *Geitonoplesium*, *Gahnia*). So you see, there remain, at best, the two first categories, that is, twenty genera that can be regarded as typically Australian, but what would even fifty-seven genera, (of which over twenty come less into consideration as inhabitants of the highest New Guinea mountain peaks) prove, as opposed to the many hundreds of species of other origin?

Relationships with the Malay [42] Archipelago are quite different; there is no characteristic savannah flora peculiar to that great area apart from those eucalyptus savannahs of the Fly-River. The grasslands in most parts of the region are nothing more than the indirect product of human hands, secondary establishment of widespread grasses on flats that have been brought under cultivation, and where from years of repeated plantings of cultivated plants, or through frequent burn-offs of continually-striving forest vegetation, the seeds of forest trees, slumbering in the ground, and their roots, were totally destroyed. Only in the driest areas of this rugged archipelago, especially on the island of Timor, lying in the rain shadow of Australia, as well as some neighbouring islands, is there found primary or primordial (i.e. not derived from human activity) savannah landscapes, without any special character, apart from a peculiar Timor eucalyptus species (*E. decaisneana*). Exactly the same grassland landscapes today, as are common everywhere in the malaysian areas as secondary formations, are also found in the forest land of New Guinea under the same conditions with approximately the same composition of species.

As far as the high forest of New Guinea and the Malay Archipelago are concerned, there are surprising similarities; by far the most genera occur in both areas, indeed those genera in the eastern part of the Malay Archipelago that contain many species usually also contain numerous species in New Guinea. Even the species community of the two areas is large, in fact the common species extend mostly from Sumatra to New Guinea, but on the other hand rarely to Australia. In many cases the plants do not belong exactly to the same species but they are probably quite closely related — they are corresponding species, as the saying goes.

Despite this, it would be wrong to consider New Guinea and the Malay Archipelago as a single floral zone, the number of peculiarities of this island is much too large. There are still no accurate statistics on the flora of New Guinea and the Malay Archipelago, but a conclusion can be

drawn from the various, fully-processed bigger collections. Of the 753 species that the author collected in New Guinea and the neighbouring islands, no fewer than 206, 27%, were endemic, i.e. peculiar to the area; of 503 species of Hollrung's [43] collection (New Guinea Expedition) 144 (28%) were endemic; of 444 genera in my collection 15 (3.4%), and of 355 genera of Hollrung's collection 10 (2.9%) were endemic. In all, about fifty genera of flowering plants are already known from New Guinea and the neighbouring islands, which occur only in this area, and are therefore absent from the Malay Archipelago, — a very large number when one considers how much is yet to be discovered on the island. According to a census taken a few years ago by the author, Borneo has 42 unique genera; the Mascarenhas Archipelago 36; the Sandwich Islands 35; Japan 31; Java 27; New Zealand 21; Socotra 17; Fiji 14; Juan Fernandez and Ceylon 10; and all other archipelagos fewer than 10 of their own genera. Only New Caledonia with 70 and Madagascar with 156 endemic genera are superior to New Guinea with regard to floral individuality, although the prospect exists that New Caledonia will be overtaken by better research in New Guinea. As you can see, New Guinea is ahead of almost all archipelagos in terms of endemic species.

In 1889 when I stayed in Kaiser-Wilhelmsland on my way from the Malay Archipelago via Australia, this peculiarity of New Guinea made a strong impression on me. Comparing further, I found that the neighbouring islands, the Bismarck Archipelago, the Aru Islands etc., participated in this special feature and so the following year I ventured to juxtapose the Malayan floral area (Malaya) and the Papuan floral area (Papua) bordering it to the east, as of equal value (Warburg, 1891). Thereby, we have already tacitly made the demarcation of New Guinea to north and west; in fact we have to combine the Bismarck Archipelago and Admiralty Islands equally floristically with New Guinea, as the western and southwestern islands of Waigu, Salwatti, Batanta, and the Aru Islands; you also have to unerringly include the Kei Islands, even though these have already revealed significant transitions to the Malukus; likewise the Louisiade Archipelago bordering New Guinea to the east. While the Solomon Islands have some special features, for example the genera *Cominsia* (Zingiberaceae) and *Chelonespermum* (Sapotaceae), and the peculiar, otherwise-Tahitian [44] Apocynaceae genus *Lepinia*, the latter may perhaps be the same as the weird Pandanaceae *Sararanga* still found in New Guinea; likewise, ivory-nut palms, so far known only from the Carolines, Solomon Islands and Fiji, also occur in British New Guinea according to missionary reports. Again, the remaining palm genera (*Pinanga*, *Caryota*, *Licuala*, *Areca*, *Metroxylon*) point to a close relationship with New Guinea. Despite this, given the very imperfect knowledge that we have of the apparently rich flora of the Solomon Islands, its floristic position cannot be precisely fixed. On the other hand I would view the flora of the Fiji Islands, together with that of Samoa and Tonga and the small surrounding islands (Ellice, Tokelau, Phoenix islands) as a special, central-Polynesian floral zone. New Caledonia with its surrounding islands, as well as the New Hebrides would represent a southwestern Polynesian floral zone; the Society and Marquesan islands a southeast Polynesian; the Sandwich Islands a northeast Polynesian; and the Caroline, Marianas, Bonin and probably also the Marshall and Gilbert Islands a northwest Polynesian floral zone.

All five of these Polynesian floral areas (indeed even New Zealand) have links with the southern Asian-, chiefly the Malayan flora. For all of them the Asian character by far outweighs all those of other nearby continents, only in New Caledonia (and New Zealand) is there a greater number of Australian elements; and in the Sandwich Islands and to a lesser extent in the Society Islands there are some hints of America. However, in not a single one of these groups (not even New Zealand), is the mixing with other types anywhere near as much as it has historically evolved in Queensland through the development of an old Asian tropical nucleus on the Australian continent. Therefore, the southern-Asian-Polynesian vegetation must be regarded as one large floral realm.

Just as, east of Papua we differentiate a series of floral regions in Polynesia, we must also sift out a few areas in Malaysia and mainland India; in Malaysia it should suffice to differentiate

West Malaysia, East Malaysia (east of the Celebes), and North Malayia (the Philippines); in continental India, in east and north Indochina the mixing has played a definite role with later-penetrating Chinese [45] forms; we therefore refer to Siam, Tonking and Cochinchina as a Sino-Indian floral zone. Both the Himalaya and the Indus region are floral mixtures, even the actual Deccan area still contains intruders. The Burmese–Bengali and the south Indian–Ceylon floral zones, among the continental zones, have undoubtedly received the southern-Asian–Polynesian floral realm in its purest form, provided that, as is botanically-geographically correct, the even richer and more original Malay Peninsula is included in Malaysia.

However, there are two insular regions that represent the Asian–Polynesian floral realm in its richest and clearest manner, and therefore have to be considered to a certain extent as Types: these are the west Malayan and the Papuan floral regions. The former excels by its lushness and the variety of vegetation, the latter through the preservation of old, specific forms; the former is useful for the understanding of earlier vegetation spread through the monsoon area, via Ceylon as far as Madagascar, the latter conveys knowledge of the relationships among and as far as the most remote islands of Polynesia. Precise knowledge of the flora of Papua is therefore of the utmost importance, for uncovering old historical plant migrations. New Guinea contains, as it were, the living monuments of an earlier period of plant life; it holds the key to many yet-unexplained and enigmatic phenomena in plant distribution in Polynesia, and will perhaps also provide evidence that is important for the reconstruction of the earlier surface conformation of that area.

Plant formations of New Guinea

Of course it is not possible to give readers untrained in tropical botany an overview of what we have uncovered to be a very rich New Guinean flora, in a few lines. We feel therefore compelled to characterize the vegetation in only a few general features, at least to awaken, in the imagination, an albeit superficial yet as vivid a picture as possible of it, and to stay close to those elements that catch the eye of the layman. [46]

As we have suggested above, you have to think of virtually the whole island covered in a dense forest canopy, cleared only here and there by human hands and covered in crops, or interrupted by grasslands that, as we have seen in the lower Fly River, open out into more extensive savannah usually occupied by acacia and eucalyptus.

While the eucalypt savannah appears to be of natural origin, representing possibly more recent stranded surfaces not yet taken over by the jungle, possibly also as a result of a long-lasting dry spell prevailing there, protecting against the invasion of high forest, while the rest of the grasslands are consistently a result of deforestation, repeated plantings of cultivated crops, and repeated fires. Only on the coast, and then only in the heavily-populated river valleys such as the Ramu, do these grasslands cover great areas, usually they are only small oases in a large forest wilderness. The word oasis is certainly not to be taken literally, for they are not splendid green pastures as was originally assumed when seen for the first time from a ship, rather they consist of coarse, scrubby high grass, identical with the dreaded *Alang-alang* wilds of the Malay Archipelago. As long as the grass sprouting again after savannah fires is short, it resembles our grasses somewhat, but the turf is not as dense and even the young leaves are broader and harder though still acceptable to cattle. Later however, it grows as high as a man, and so hard and sharp that cattle disdain it, and it is torture to people that have to squirm through it. One can hardly go long distances without beating a path and even then due to the prevailing calm and reflective heat in the grass it is often almost unbearable. (The Graminea *Imperata arundinacea*, the actual *Alang-alang* grass of the Malay Archipelago, does not seem to play such a prominent role in New Guinea as it does for example in Java, where all other grasses rank behind it. *Rottboellia ophiuroides* near

Finschhafen belongs among the main components of the grasslands, as does *Andropogon serratus* and *Themeda forskalii* and *Themeda gigantea*, with smaller quantities of *Ophiurus corymbosus* and *Apluda mutica*. *Pennisetum macrostachyum* also occurs sometimes in these grasslands). Few flowering plants enter into this grassy maze; some take the opportunity when the grass is just sprouting after [47] a fire and does not yet cover the ground, others shoot between the high grass or hide in it, few are bushy or tree-like but are in no position to withstand the fires.

In the first category are the Leguminoceae *Zornia diphylla* and *Lourea obcordata*, the Amaryllidaceae *Hypoxis minor*, as well as *Oxalis corniculata* here and there. In the second category there are, above all, a large number of Leguminoceae *Uraria picta* and *lagopodioides*, *Desmodium polycarpum*, *gangeticum*, *latifolium*, and *triquetrum*, *Crotalaria linifolia* (in the Bismarck Archipelago also *Crotolaria alata* and *biflora*), *Indigofera enneaphylla* and *trifoliata* as well as *Cassia mimosoides*, of creepers of this family *Glycine javanica*, and sometimes the otherwise-bush-loving *Pueraria novo-guineensis* (the sole endemic member of this formation); also occurring here are the Malvaceae *Abelmoschus moschatus*, the *Euphorbia serrulata*, the Melastomaceae *Osbeckia chinensis*, the Campanulaceae *Wahlenbergia gracilis*, the Convolvulaceae *Convolvulus parviflorus*, the Gentianaceae *Exacum tetragonum*, the Scrophulariaceae *Buchnera urticifolia* and *Striga lutea*, the Rubiaceae *Knoxia corymbosa*, *Oldenlandia herbacea*, as well as the parasitic Orbanchaceae *Aeginetia indica*. The Monocotyledons are barely represented, apart from the grasses; only the Liliaceae *Dianella ensifolia* can be included here. The Melastoma species above all are bush-like, although the main representative of this genus in the grasslands of Malaysia, *Melastoma malabathricum* has been only indicated but not yet proven with certainty. Also, the original American guava (*Psidium guajava*) can thrive in the grassland. Treelike are *Albizzia procera*, *Sterculia foetida* and *Sarcocephalus cordatus*, which, however, as a result of fires, only rarely attain full height in open grasslands normally. Also, the cajeput tree of the Moluccas, *Meleleuca leucadendron*, is found at least in the Fly River, whether in the original or secondary grasslands cannot be determined; in the Moluccas the tree resists the fires of secondary grasslands. Almost without exception these are plants widespread in South Asia and, in some cases, also in Africa, that compose this formation.

A second formation forms the secondary bush, consisting of mostly treelike plants that either settle directly on abandoned gardens or gradually displace these grasslands. If people do not support it, this formation is ephemeral and, with time, gives way to high forest or rather transforms into it. The families of Euphorbiaceae, Urticaceae, Moraceae, and Ulmaceae are mainly engaged in the incidentally very colourful composition of this formation. Again, these are mostly widespread plants, although there are several specifically-Papuan plants among them.

These cover most *Mallotus* species, besides *Mallotus philippensis*, [48] *ricinoides*, *tiliifolius*, *moluccanus*, *muricatus*, also several endemic species (e.g. *columnaris* and *chrysanthus*), and likewise *Macaranga* species (e.g. *Macaranga tanarius*, *schleinitziana*, *involucrata*, as well as several endemic species *Macaranga clavata*, *densiflora*, *cuspidata*, etc.); further *Carumbium populneum*, *Berynia cernua*, *rhamnoides* and *vestita*, several *Phyllanthus*, *Securinega*, *Acalypha*, *Claoxylon*, *Antidesma*. From the Urticaceae you can find bushes or trees from the genera *Pipturus*, *Villebrunea*, *Maoutia*, *Leucosyke*, *Cypholophus* and especially the nettle tree *Laportea crenidata*. Also, the family of Moraceae is represented (some endemically) by *Malaisia*, *Pseudomorus*, *Cudranus* and a number from the genus *Ficus*, principally from the sections *Seidium* and *Covellia*. *Trema amboinensis* is common from the Ulmaceae family; the Rubiaceae are represented by *Morinda citrifolia* and *Mussaenda frondosa*; the Verbenaceae by the genus *Callicarpa* and *Geunsia farinosa*; the Borraginaceae by *Ehretia buxifolia*, as well as several *Tournefortia* species; the Vitaceae by various *Leea* species; the Rhamnaceae by *Alphitonia excelsa*; the Olacaceae by *Cansjera leptostachya* and *Opilia amentacea*; the Sapindaceae by *Allophylus timorensis* and *litoralis*; the Anacardiaeae by *Semecarpus* species; the Sterculiaceae by *Abroma molle*, *Kleinhofia*

hospita, *Commersonia echinata*, *Melochia indica*; the Malvaceae by *Hibiscus sabdariffa* etc. As for creepers, there are only slim plants that grow quickly into the air, especially from the families of Convolvulaceae, Dioscoreaceae, Cucurbitaceae but also some Leguminosae (e.g. *Abrus precatorius*), *Aristolochia*, clematis species; Menispermaceae (e.g. *Cissampelos pareira*), Apocyneae and, more epiphytically, several Aclepiadaceae. The undergrowth is composed of a colourful mass of Scrophulariaceae, Acanthaceae, Labiatae, Solanaceae, Malvaceae, Tiliaceae, Euphorbiaceae etc. Also, *Cordyline terminalis*, known by us as a houseplant under the name *Dracaena* can be found here very frequently, likewise the pretty Marantaceae, *Clinogyne grandis*.

The third, and by far the most important vegetation form or formation group consists of the primary forest, where the formations of the coastal forest, the forest of the plane, and of the lower slopes, the actual mountain forest, and the forest of the mountain peaks, have to be differentiated.

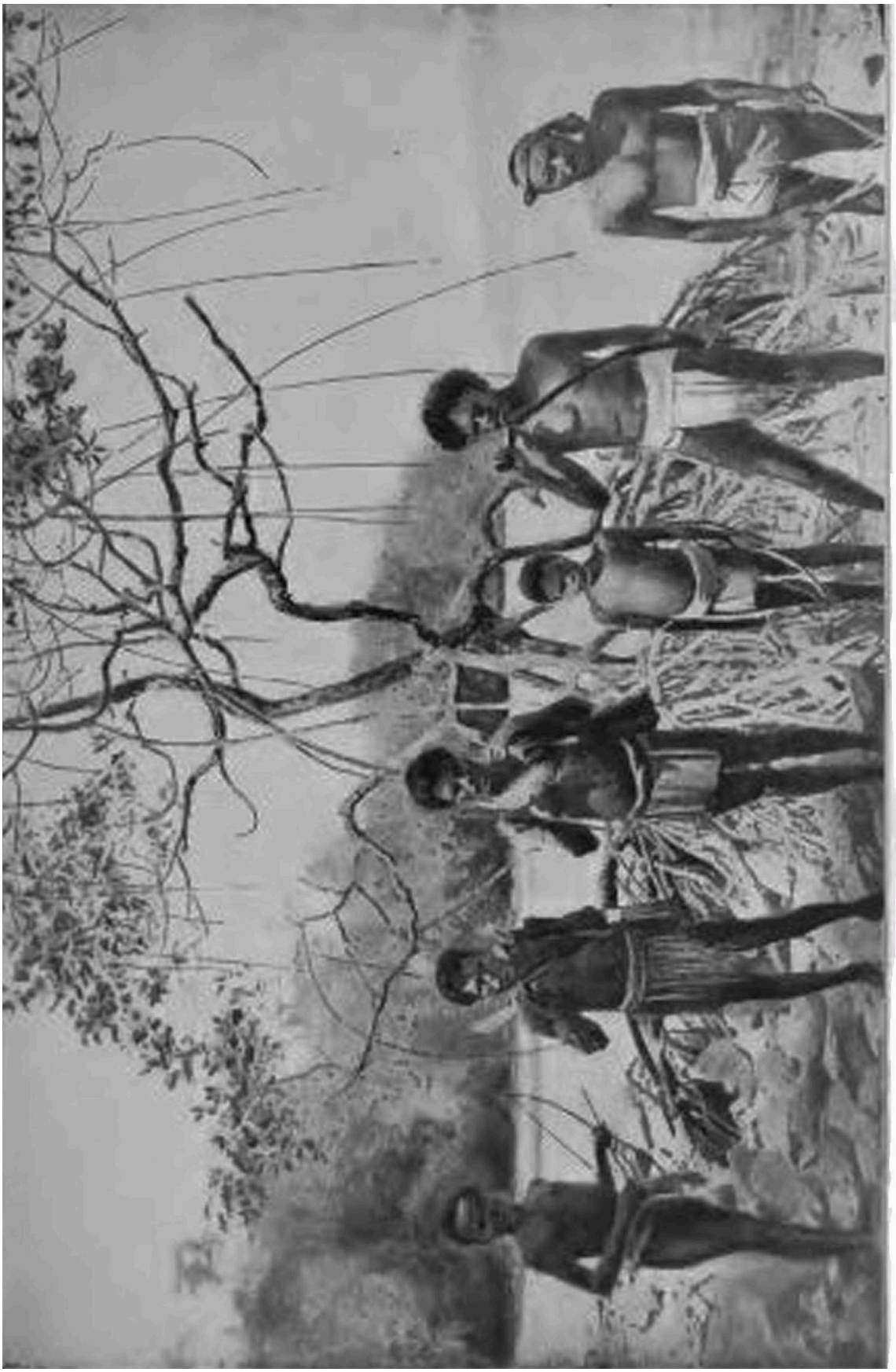
The New Guinea coastal forest has little special; it is the same forest that extends also in the Malayan area and somewhat less luxuriantly in tropical Australia and, depending on the distance from Asia, in a gradually increasingly impoverished manner, far into Polynesia. The water-forest or mangrove formation is distinguished from the beach forest or Thespesia- or Barringtonia formation.

The mangrove forest is made up mostly of peculiar little trees standing together as if on stilts. They often even send down curved roots from their wide, overhanging branches, hence the name of the family being Rhizophoraceae [49] or root-bearer, albeit some other families are represented among the various species in the water-forest (see Plate 2).

Of the Rhizophoraceae here, there are *Rhizophora mucronata* and *conjugata*, *Bruguiera gymnorhiza* and *parviflora*, *Ceriops candolleana*, *Kandelia rheedii*. Furthermore, there is observed of this formation in New Guinea the Combretaceae *Lumnitzera racemosa*; the Rubiaceae *Schyphiphora hydrophyllacea*; the Myrsinaceae *Aegiceras majus* and *floridum*; and, as rarities, the small-shrubby Plumbaginaceae *Aegialitis annulata*. The Verbenaceae *Avicennia officinalis*, the Meliaceae *Carapa moluccensis* as well as the longterm Bignoniaceae *Dolichandrone spathacea* mediate the transition to the actual beach flora.

At high tide the trees are surrounded by water almost up to the start of the branches; at low water the stilts stand free in the quite revolting smelling mud. Instead of stilts many species have peculiar, asparagus-like, freely-ending root branches projecting out of the mud, or these form acutely-angled hooks or shallow curves in the open air; it is believed that these root structures represent respiratory organs. Only a few species (*Bruguiera* especially) form tall stems, most remain small, many shrubby. Usually the seeds germinate beforehand on the maternal stem, and the seedlings are structured in such a way that they can easily burrow into the mud. They avoid open coasts but can be found on the other hand in sheltered bays and especially in the brackish water of delta areas, in stands a mile wide. Undergrowth is unable to flourish in these forests, likewise vines, however some epiphytes can be found, for example several Asclepiadaceae, even some orchids but especially some strange ant-plants (*Myrmedoma*, *Hydnophytum*) whose bulbous stems, as big as a head, contain cavities that are inhabited by ants.

The beach forest and the spreading beach scrub in front of it, i.e. towards the sea, is made up of extremely varied components, and surpasses that of most coasts in terms of richness; this is probably due in large part to the fact that the coconut palm, predominating in more cultivated areas of southern Asia and Polynesia, does not yet occupy the space that it deserves in New Guinea in view of its economic importance. Coming together here is a quite remarkable jumble of tree and



Mangrove (*Rhizophora mucronata* Lam.) with aerial and sult roots. Sigar, Dutch New Guinea
(after a photograph by Prof. O. Warburg)

shrub species thrown together from widely different families. Particularly striking are two trees from the mallow family, the so-called Beach [50] lime (*Hibiscus tilliaceus*) and the Beach poplar (*Thespesia populnea*). The leaves of the former are reminiscent of the silver linden, and those of the latter: the black poplar; however the big marshmallow-like flowers make it instantly recognizable as Malvaceae. The former plant has magnificent bast fibre, eminently-usable as binding material and for knitting fibre. The beach-beautiful leaf, a Clusiaceae (*Callophyllum inophyllum*) a tree that is easily recognizable by its fine, closely-parallel-veined leaves, the large flower panicles, and spherical, oil-producing fruit, provides, through its exquisite beautifully-flamed red wood, an important export product of Kaiser-Wilhelmsland. A lot of fine furniture (for example in the Reichstag, Lloyd steamers, colonial homes) is made from it. The seed oil is used by the natives for greasing their bodies; the resin (the *Tacamahac* of older pharmacopoeias) is used for sealing their canoes. An equally-beautiful, but difficult to work with so-called ironwood is provided by the Leguminosae *Intsia [Afzelia] bijuga* (see Plate 3). This freshly bright-red, but soon turning dark red wood, extremely durable in the ground and in water, is exported to Germany by the New Guinea Company, as is the so-called 'nut wood' — the beautiful brown-marked wood of the Borraginaceae *Cordia subcordata*, although admittedly not a very tall tree is easily recognizable by its big orange-coloured flowers. In western New Guinea, and particularly on the Kei Islands the ironwood related to the *Afzelia*, *Maniltoa grandiflora* is often exported; the giant niches which are formed by the root struts or trunk supports are clearly recognizable in the photograph reproduced on Plate 4.

Because of the taller though much narrower slats, the Sterculiaceae *Heritiera litoralis*, also frequently found on the beach is even called the 'plank tree', although the name 'boat-fruit tree' is preferable since the fruits in fact look similar to a broad, markedly-keeled, tawny boat. The Hernandiaceae *Hernandia peltata* could be designated as the 'bubble fruit tree', a tree that is characterized by large, shield-shaped leaves.

Of great importance is the Leguminosae beach chestnut, *Inocarpus edulis*, whose seeds roasted over a fire taste like chestnuts, and are eaten in massive quantities by the natives. In areas with sedentary populations (such as, for example, the island of Bilibili) they are therefore found *en masse* [51] near the villages, either planted, or propagated from imported seeds and only conserved. For some low islands of Polynesia, this tree is extremely beneficial.

The beach almond tree, *Terminalia catappa*, is also worth mentioning — very tasty almond-like; but in proportion to the big, bi-convex floating fruits that are hard to open, it has somewhat small seeds. The tree stands out due to its tiered construction, and the fact that in the dry season it sheds its leaves after they have just adopted an autumnal red colour.

Two beach plants are notable for their abundant milky sap: firstly the Apocynean tree *Cerbera odollam*, with long leaves, big white flowers, and pear-sized, egg-shaped, floating fruits; then a shrub belong to the Euphorbiaceae, *Excoecaria agallocha*, with inconspicuous flower catkins and small fruit capsules, whose milky sap, if it gets into the eyes, causes strong inflammation and even blindness.

The conifer-like but strange-looking (see Plate 5) beach casuarina (*Casuarina equisetifolia*) whose green, hanging terminal branches look like very thin horsetails is interesting; its fruit, the size of a hazelnut, have a particular structure. The wood, which burns freshly like resin is very hard and heavy, but is easily broken; the British refer to it as Beefwood.

Other trees yet to be mentioned in the beach forest are the Leguminosae *Pongamia glabra*; the silver-leafed Borraginaceae *Tournefortia argentea*; the Lecythidaceae *Barringtonia speciosa*, *acutangula*, and *racemosa*; the Verbenaceae *Premna integrifolia*; the Diospyreae *Diospyros laxa*; as well as the Sapotaceae *Sideroxylon ferragineum*; also *Myristica schleinitzii* could be included among the beach forest flora. To be mentioned among the smaller bushes are the Simarubeae *Soulamea amara*; the Sapindaceae *Dodonaea viscosa*; the Rhamnaceae *Colubrina asiatica*; the

Intsia (Afzelia) bijuga (Colebr.) O. Kuntze
A Flowering twig *B* Flower ⅓ *C* Fruit ⅓

Plate 4

Buttress roots of the ironwood tree *Maniltoa grandiflora* (A.Gray) Scheff. Kei Islands
(after a photo by Prof. O. Warburg)

Plate 5

Beach casuarina (*Casuarina equisetifolia Forst.*) Aru Islands
(After a photograph by Prof. O. Warburg)

Leguminosae *Sophora tomentosa*; also, *Scaevola koenigii*, a shrub-like Goodeniaceae, can be included here, although it is also often found individually on the beach, likewise the Olacaceae *Ximenia americana*, whose cherry-like, but bland fruit with a big stone is frequently eaten. Often you will find the magnificent, blooming Rubiaceae *Guettarda speciosa*, and species of the genus *Timonius*, although they prefer more the edge of the actual tropical forest.

We need not go into any detail about the all too familiar coconut palm, it is noted only that on the island of New Guinea itself the exploitation of copra is now beginning on a larger scale. [52] For example in 1894–95 British New Guinea exported copra for 57,000 Marks; 1895–96 for 55,000 Marks; and 1896–97 for 70,000 Marks. Similarly, export from the German sector and new plantings are on the increase.

In conclusion, there is just a reminder about the *Cycas circinalis* frequently occurring in beach forest. These cycads occur from time to time, virtually forming stands, for example on the Aru Islands, where one could almost speak of cycad forests, as clearly shown on Plate 6. The young leaf buds are eaten as a vegetable, and so the natives often leave the cycads standing when they cut down all the other trees for whatever reason.

There are many epiphytes in the beach forest, especially among the ferns, for example *Polypodium phymatodes* and *Linnaei*, large ferns with peculiar, variously-shaped fronds; further, a small-leaved fern *Drymoglossum piloselloides*, and many others; also, many Orchideae, for example beautiful *Dendrobium* species; many ant plants (*Myrmecodia*, *Hydnophytum*); epiphytic Asclepiadaceae of the genera *Hoya* and *Dischidia* but few others; mostly these are plants with thick branches closely pressed together, leaves often with a bluish tint from a layer of wax. They must be well-protected against drying out, because beach forest shade is not very dense. If we have missed lianas in the mangrove forest, a number of them appear in the beach forest, above all the giant pod, *Entada pursaetha*, a Leguminosae with a broad, woody, spiral stem, whose loments, as long as a man and as wide as a hand, hang down from the crowns of the beach trees. The flat, red-brown seeds, far bigger than a thaler, have a very thick wooden shell and, hollowed-out and corked, often serve in Queensland as a pocket container for matches, for which they are wonderfully well-suited during walks in the rainy season, being totally waterproof. Also interesting is the beach burny bean (*Mucuna gigantea*), a Papilionaceae with unpleasantly-burning red fox hair on the pods. Other lianas worth mentioning are the widespread Malpigiaceae *Tristellateia australasiaca*; the Rhamnaceae *Smythea pacifica*, restricted to the Papuan Archipelago and Polynesia; the Leguminosae *Derris uliginosa*; also, the monocot *Flagellaria indica* is found in many beach bushes; likewise Ipomoeae *Ipomoea paniculata*, and *Ipomoea thurpetum*, and *Calonyction grandiflorum* often climb up beach bushes, sometimes *Canavalia obtusa*, and also the Apocyneae *Parsonsia spiralis* and the Asclepiadaceae *Sarcolobus retusus* or related species. Most remarkable is the occurrence of the beautiful pitcher plant *Nepenthes treubii*, discovered by the author in coastal forests; the *Nepenthes* species are generally real tall-forest plants. [53]

In front of the beach forest there usually extends a thicket of mostly thorny bushes, consisting especially of Caesalpinia (*C. nuga* and *C. bonducella*), or it is represented by a tangle of pandanus shrubs: the smallest of which (*Pandanus polycephalus*) starts branching at ground level; the medium-sized (*P. fascicularis*) is supported right up to the crown by broad-spreading stilt roots; while one species (*P. dubius*) grows into a tall, straight-stemmed tree with extremely thick aerial roots, (see Plate 7). The infructescences, consisting of many individual fruits, are plum-sized in *Pandanus polycephalus*; in *P. dubius* on the other hand they are bigger than a head; in *P. fascicularis*, whose infructescences are slightly smaller than those of *P. dubius*, the scant flesh is gnawed by the children while the leaves serve as good plaiting material for mats, containers and the like.

Forest-like stand of *Cycas circinalis Roxb.* Aru Islands
(After a photograph by Prof. O. Warburg)

Plate 7

Giant pandanus (*Pandanus dubius* Spreng.); left, the genuine sago palm
Kei Islands
(After a photograph by Prof. O. Warburg)

Only a few species venture out onto the flat, unprotected sandy beach. These are mostly small, creeping grasses (for example *Thouarea sarmentosa*, *Cenchrus echinatus*, as well as several *Cyperus* species), furthermore, especially goat's foot creeper *Ipomoea pes caprae*, with its bilobed, fleshy leaves, then the violet-flowering beach bean *Canavalia obtuse*, and the yellow-flowering beach beans *Vigna lutea* and *V. luteola*; the fleshy-leaved Aizoaceae *Sesuvium portulacastrum*; the silver-grey, violet-flowering Verbenaceae *Vitex trifoliata*, sometimes with simple and sometimes with three-fold leaves; composite *Wedelia scabriuscula* with rough-looking, yellow basket flowers; here and there a flowered Amaryllidaceae *Crinum macrantherum* (probably only a variant of the widespread *C. asiaticum*); from the bushes, the Leguminosae with connected husks, *Desmodium umhellatum*; the white-flowering Verbenaceae *Clerodendron inerme*; the Goodeniaceae *Scaevola koenigei* with large, spatulate, fleshy leaves and hidden, lobelia-like flowers. Like the hemp and flax vine, there winds over the beach bushes the widespread, thread-like and leafless *Cassytha filiformis*, which the botanists, strangely enough, place in the laurel family. Where coral limestone reefs occur along the shore [54] they tend to be overgrown by the Lythraeae *Pemphis acidulo*; Polynesian arrowroot, the peculiarly slit-leaved *Tacca pinnatifida*, is often found between the cracks in the coral; while on steeper coasts the beautiful Rubiaceae *Bilka grandiflora*, has made its domicile as has the pretty, violet-flowering Gesneriaceae *Baea commersonii*, a flower that recently passes in trade as the New Guinea violet.

To conclude, we discuss the transition from coastal swamp forest to the riparian forests of the rivers, where, besides many tropical forest forms there are also a few restricted to brackish waters. One is the famous nipah palm *Nypa fruticans*, with large fronds but no trunk, from which a good palm wine can be obtained, but especially because in great measure its fronds are renowned for thatching roofs; the second is the thorny-leaved *Acanthus ilicifolius*. There is also a swamp fern, *Acrostichum aureum*, widespread in the tropics, and common in these brackish marshes.

If we looked round thoroughly in the beach forest, because so many easily identifiable, recurring forms, striking even to the casual visitor, are found there, then we can be brief in our description of the tall forest because in a limited space we will not succeed in sifting through the overwhelming abundance of forms in such a way that a non-botanist will benefit from it.

Apart from a few steep slopes and ravines, or humus-deficient limestone ridges occupied by shrubby Rutaceae (*Micromelum*, *Atalantia*, *Xanthoxylum*), and Euphorbiaceae (*Breynia*, *Securinega*, *Phyllanthus*) or even by thickets of a small bamboo genus (*Schizostachyum*), the damp, dripping tall forest covers the entire flat area of the island as well as the lower slopes of the mountains. It is composed of several superimposed layers of trees, whose imprint is bestowed by a extremely violent struggle for light. The highest level is formed by trees that often reach 30–50 metres in height, the lowest level consists of trees 5–10 metres tall; there is little shrubbery: the forest floor is rather bare. Only where rather more light penetrates right to the forest floor, because of fallen trees, scrub, forest clearing, or on the forest fringes, or because of young growth, is there a dense carpet of small plants and shrubs.

The upper storeys of the forest are still very poorly known in their composition; [55] only rarely does one obtain useful flower- or fruit material, together with the definitely-associated leaves. Occasionally, sufficient material is obtained by shooting it down, even more rarely by sending natives up trees. Usually one is dependent on fragments blown down, if the trees do not have flowers emerging below, from the trunk, which often happens. From the material available, *Ficus* genera, particularly the so-called killer- or strangler figs, which embrace other trees and gradually strangle them, then Meliaceae and Anonceae, all play a very big role; also Clusiaceae, Leguminosae, and Sterculiaceae. Often found on the forest floor are the fallen, easily-recognizable fruits and flowers of the huge Datiscaceae *Octomeles*; frequently also the thorny fruit of Sloaneae; the rock-hard seeds of *Eleocarpus*, suitable for rosary beads; the seeds of *Pangium edule*, edible when roasted; the seeds of the candlenut tree (*Aleurites moluccana*), used as candles when shelled

and mounted on sticks; the fantastically-formed fruits of *Pterocymbium*; the winged seeds of *Pterygota*; wild nutmeg; real acorns; the characteristic fruit of a *Cedrela*, whose red wood could serve in box-making (wooden cigar boxes); the edible seeds of the Sapindaceae *Pometia pinnata*; the peculiar round, flat, winged fruits of *Pterocarpus indicus*, a tree that in the Malay Peninsula produces a popular hardwood that is also exported from British New Guinea as Malabar wood; the oblong, pointed, triangular, stone-hard seeds of *Canarium* genera, containing pleasant-tasting almonds; the gyro-shaped stone kernels of the Anacardiaceae *Dracontomelum*, whose flesh is popular, as is that of the *Spondias* species, equally common in New Guinea.

Also, a strange Proteaceae genus, *Finschia*, which is peculiar to the island, is found as a tall tree in the lower montane forest. Very striking, is the ant tree, *Endospermum formicarum*, whose hollow branches are inhabited by ferocious ants. To a slight extent, this characteristic is shown also by *Myristica*- (nutmeg-) species, and a species of the Meliaceae genus *Amoora*, as well as *Kibara*- and *Ficus* species. As for Dipterocapaceae, which play a major role in the rain forests of Borneo and Sumatra and provide important resins such as the real white damar gum, just a few have been found, although they [56] easily betray themselves through their fruits usually provided with several long wings. More common on the other hand are Sapotaceae, which, however, are still little known, yet they deserve the most exacting examination, because of their milky sap often containing gutta-percha. Recently, samples of exquisite gutta-percha have even been obtained by the natives through trading in the hinterland of Berlinhafen, yet still no one knows the tree. Investigation into rubber in many species of *Ficus* would also be important; in British New Guinea the rubber from *Ficus rigo*, an endemic species, has found its way into trade a couple of years ago, and in 1894–1895 it was exported for 500 Marks; 1895–1896 for 12,000 Marks; in 1897–1898 on the other hand, for 69,000 Marks. In German New Guinea the first attempt to examine the hundreds of available *Ficus* species for rubber, has barely been made. The often-occurring Apocyneae tree, *Alstonia scholaris* does indeed contain a lot of milk sap, but it is unuseable; likewise the breadfruit tree. The Bombaceae, *Bombax malaricum*, could provide a kind of vegetable silk in its beautifully-silky, but unfortunately short-staple seed fibres; the material is less suited as pillow-stuffing than the related *Ceiba pentandra*, often planted in New Guinea.

Worth highlighting is the *massoi* tree (*Massoia aromatic*) a relative of the cinnamon, whose bark is highly prized as a medicine in the Malay Archipelago. In the seventies, annual exports amounted to around 50,000 Marks; the similarly aromatic *kulit-lawan* bark, also exported from there to the Malay Archipelago, stems also from a relative of the cinnamon, while the third trading bark from Dutch New Guinea, *pulassari* bark, originates from a climbing Apocyneae *Alyxia*.

Furthermore, one should be made aware of an Anacardiaceae tree possibly belonging to the genus *Gluta*, with a very poisonous milky juice, which causes severe inflammation, which is why one must be very careful in these cases.

Of the taller trees, only a few are instantly recognizable from their stature. Above all, these include the few tall palms known so far in New Guinea; the elegant, coconut-like *Kentia costata*, and the majestic *Orania*; also the bizarre *Caryota*, easily recognizable by their leaf tip like a fish fin, and one of the two fan palm genera [57] *Livistona*, while the other fan palm genus, *Licuala*, easily recognizable by its leaves incised right down to the ground, occurs only as undergrowth.

Very characteristic also are the forest casuarina, *Casuarina nodiflora*, and the giant *Araucaria hunsteinii*, whose gum is used by the natives as putty. Also the *Dammara* species, which occurs at least in Dutch New Guinea, is likely to be recognized by its leaves and growth; in the Moluccas, Celebes, and the Philippines its resin forms an important trade article: for example the Kopal Manila trade.

Among the cultivated trees, the breadfruit tree (*Artocarpus incisa*) especially, is of outstanding importance (see Plate 8); it is always in great abundance around the villages, but often also in the plains forest, usually with seed-bearing fruit; the related jackfruit tree, Malayan *Nangka*

Plate 8

Breadfruit tree (*Artocarpus incisa Forst.*)
(From a photograph)

T. Gürke, drawn from nature

Illipe maclayana F. von Mueller

A. Twig ½; B. Fruit, cut lengthwise ½; C. Seed

Plate 10

T. Gürke, drawn from nature

A – C Antiaropsis decipiens K. Schum
A. Flowering twig ½; *B*. Receptaculum; *C*. Seed

D – F Dammaropsis kingiana Warburg
D. Receptaculum ½; *E*. the same in longitudinal section ½; *F*. Fruit

(*Artocarpus integrifolia*) and the *Tjampeda* (*Artocarpus polyphema*) are found only in the Malay-influenced west of the island. Some Sapotaceae trees (*Illipe maclayana* and *I. hollrungii*), which are sometimes also planted by the natives, provide very nice tasting fruit (see Plate 9). A magnificently leafy tree with beautiful almonds in very hard shells is *Terminalia kaernbachii*, a close relative of the beach almond tree.

Of particular importance is the Papuan nutmeg, *Myristica argentea*, belonging among the little trees. It constitutes the most important export item in Dutch New Guinea; even in the seventies the annual export value was estimated as 170,000 Marks. The nut is longer than the real nutmeg; and so in the trade it is called 'long nutmeg', and it has, perhaps, a more intense, but not so fine an aroma as the real nutmeg, and it is therefore also lower in price.

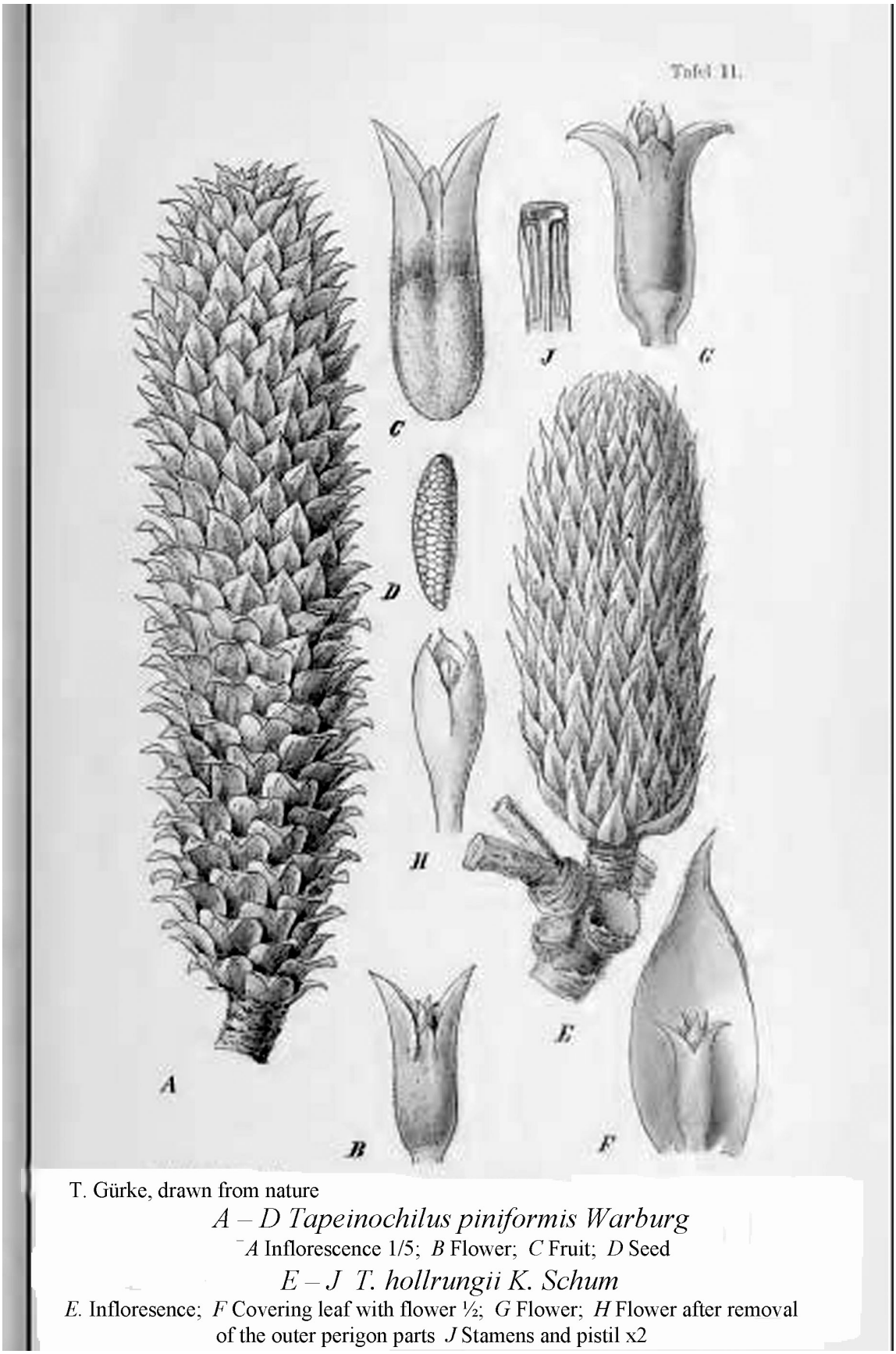
The aromatic mace (nutmeg flower) of this species has recently been exported; it is dirty brown and comes to commerce, ripped in pieces off the dry nuts, as so-called mace shells, not prepared in such a fine form as the mace of the real nut. The nut should still be found at Humboldt Bay, but mainly it grows in the westernmost part, for example on Sigar Bay. In Astrolabe Bay and eastward, it is never found.

Particularly striking forms of the lowermost tree level are the two characteristic Moraceae genera *Antiaropsis* and *Dammaropsis* (see Plate 10). The former has flat spreading inflorescences [58] with red bracts, the latter has a few gigantic leaves and inflorescences as big as a head, which are covered outside by bracts and by scales.

If we mention some minor ebony species (*Maba*); strangely grim-looking pisona trees; wild mango trees; beautifully-flowering Saurauja; Myrtaceae of the genus *Eugenia*; partially-close relatives of the clove; fragrant *Aglaia*; strange *Eschweilera*; the little Annonaceae *Popowia*; the beautifully-flowering Lythraceae *Lagerstroemia koehneana*; and the numerous palms characteristic of New Guinea, for example from the genera *Areca*, *Pinanga*, *Drymophloeus*, *Ptychosperma*, then we have at least briefly mentioned the most interesting of the lower trees.

The actual undergrowth, rarely troublesome when walking in the tall forest, is composed of shrubs and perennials. The very hairy *Dracaena angustifolia* is especially worth mentioning. There are also *Pittosporum* species with dehiscent fruits that are multi-valved and strikingly large for the genus; many different Rubiaceae, for example red-flowering *Ixora* and white-flowering *Pavetta*, massive *Psychotria*, *Lithosanthes*, *Pachystylus*, even *Coffea* species, *Lasianthus*, *Canthium didymum* smelling like excrement. There is the peculiar Mimosa genus *Hansemannia*, characteristic of the Papuan archipelago; several Euphorbiaceae, including the parent plant of our garden crotons *Codiaeum variegatum*, often beautifully, brightly-marked even in the wild state. There are very painful stinging *Laportea* species; also Zingerberaceae of all kinds, from the genera *Costus*, *Globba*, *Amomum*, *Curcuma*, *Alpinia*, *Ridelia* etc., but above all the genus *Tapeinochilus*, so very characteristic of the Papua Archipelago, with its infloresences that resemble pine cones (see Plate 11).

The ground is covered here and there mostly with blue-flowering Acanthaceae (e.g. *Rungia coerulea*, *Justicia angustata*, *Ruellia aruensis*); Gesneraceae are often found, for example the lovely blue *Rhynchoglossum obliquum* and a series of *Cyrtandra*. Of the Scrophulariaceae are the pretty *Torenia* and *Bonnaya*; small, white-flowering Rubiaceae (*Geophila reniformis* and *Ophiorrhiza*); furthermore, the curious genus *Chloranthus*, and Urticaceae of the unimpressive flowering genera *Elatostemma*, *Pellionia*, and *Procris*; on the other hand, the begonias and balsams are not very abundant, although they are represented by pretty, flowering species. There are also monocots [59] on the floor of the tall forest, such as several terrestrial orchids (e.g. *Pogonia flabelliformis*); and the Commelynaceae genera *Aneilema*, *Commelyna*, and *Pollia*; as well as large-leaved *Curculigo*- and *Phrynium* species. Also, parasitic *Balanophora* species are found in the forest but so far no *Rafflesia* from that area; but the small parasitic gentian *Cotylanthera tenuis* has already been encountered in New Guinea.



T. Gürke, drawn from nature

A – D Tapeinochilus piniformis Warburg

A Inflorescence 1/5; *B* Flower; *C* Fruit; *D* Seed

E – J T. hollrungii K. Schum

E. Infloresence; *F* Covering leaf with flower ½; *G* Flower; *H* Flower after removal of the outer perigon parts *J* Stamens and pistil x2

Finally it remains for us to focus on the richness of the lianas and epiphytes in the tall forest. When you walk through the forest, usually of course you cannot see much of them; just here and there thick, cable-like strands, seldom twining, seeming often to hover in the air and joining the trees or branches together. However, it is totally different when you admire the myriad of epiphytes on fallen trees: the orchids, ferns, Gesneraceae, epiphytic *Ficus* species, Asclepiadaceae, perhaps also the Santalaceae *Henslowia*. The number of species of liana is easily recognised when one looks at the forest from the outside, or if one wants to create an entrance into it through the tangle of lianas. The abundance of species is absolutely amazing. The following genera may serve as a small selection: *Pothos*, *Rhaphidophora*, *Smilax*, *Geitonoplesium*, *Dioscorea*, *Stemone*, *Freycinetia*, *Flagellaria*, *Piper*, *Aristolochia*, *Clematis*, *Anamirta* and many other Menispermaceae, *Tetracera*, *Lophopyxis*, *Jodes*, *Erythropalon*, *Cansjera*, *Cissus*, *Gouania*, *Quisqualis*, *Combretum*, *Salacia*, *Passiflora*, *Hollrungia*, *Modecca*, *Entada*, *Derris*, *Mucuna*, *Myxopyrum*, *Petracovitex*, *Ourouparia*, *Ericybe*, *Ipomoea*, *Lepistemon*, *Tecoma*, *Strychnos*, *Ichnocarpus*, *Alyxia*, *Lyonsia*, *Anodendron*, *Marsdenia*, *Gongronema*, *Mikania* and several Cucurbitaceae: worthy of attention above all in the forest interior are the huge, empty fruit spheres of the Cucurbitaceae *Zanonia macrocarpa*. These are the size of a pumpkin, lying on the forest floor surrounded by the usually scattered, remarkable, flat winged seeds. However, there are also smaller lianas in the forest interior, that had to be ignominiously subjugated in the struggle for the light. Only one group of lianas makes its presence felt in the interior of the forest, indeed in a quite unpleasant manner: these are the rattan palms occurring in many species, with their spines and barbs; indeed many swing long flagella studded with barbs in the air, frequently missing their target and, instead of branches of trees, catching and holding unsuspecting hikers. However it is not improbable that the humans will take their revenge and, one day, for the betterment of our tubular furniture industry of rattan plaiting and tubular sheet suitcase [60] manufacture, this will lead to a relentless war of extermination against these vegetable serpents, sometimes reaching more than a hundred metres long, as is already happening in Borneo and the Malay Peninsula.

Following the description of the tall forest, we must still briefly mention the single most important New Guinea palm after the nipa and coconut palms. Naturally, this means the sago palm, which occupies the swampy areas in the plain in huge stands, and forms impenetrable thickets. It provides the natives with an important part of their food: the mature palms are felled, cut in half lengthwise, the pulp removed and kneaded with water; the draining, starch-containing water is collected in canoes or in hollow, halved sago stems and the starch is allowed to settle. Apart from the common prickly- (*Metroxylon rumphii*) and the thornless (*Metroxylon sagus*) sago palms, other species occur in New Guinea, with a new one *Metroxylon oxybracteatum* illustrated on Plate 12.

The real freshwater flora are little known. The same species in general are certainly in the Malay Archipelago and Australia; freshwater flora indeed remain fairly similar over large areas. Of the lilies, *Nymphaea lotus* and *N. stellata* have been observed; the Indian lotus, *Nelumbo nucifera*, and the reed *Phragmites roxburghii* are also found there; *Myriophyllum*, *Potamogeton* and the like are, naturally, not missing.

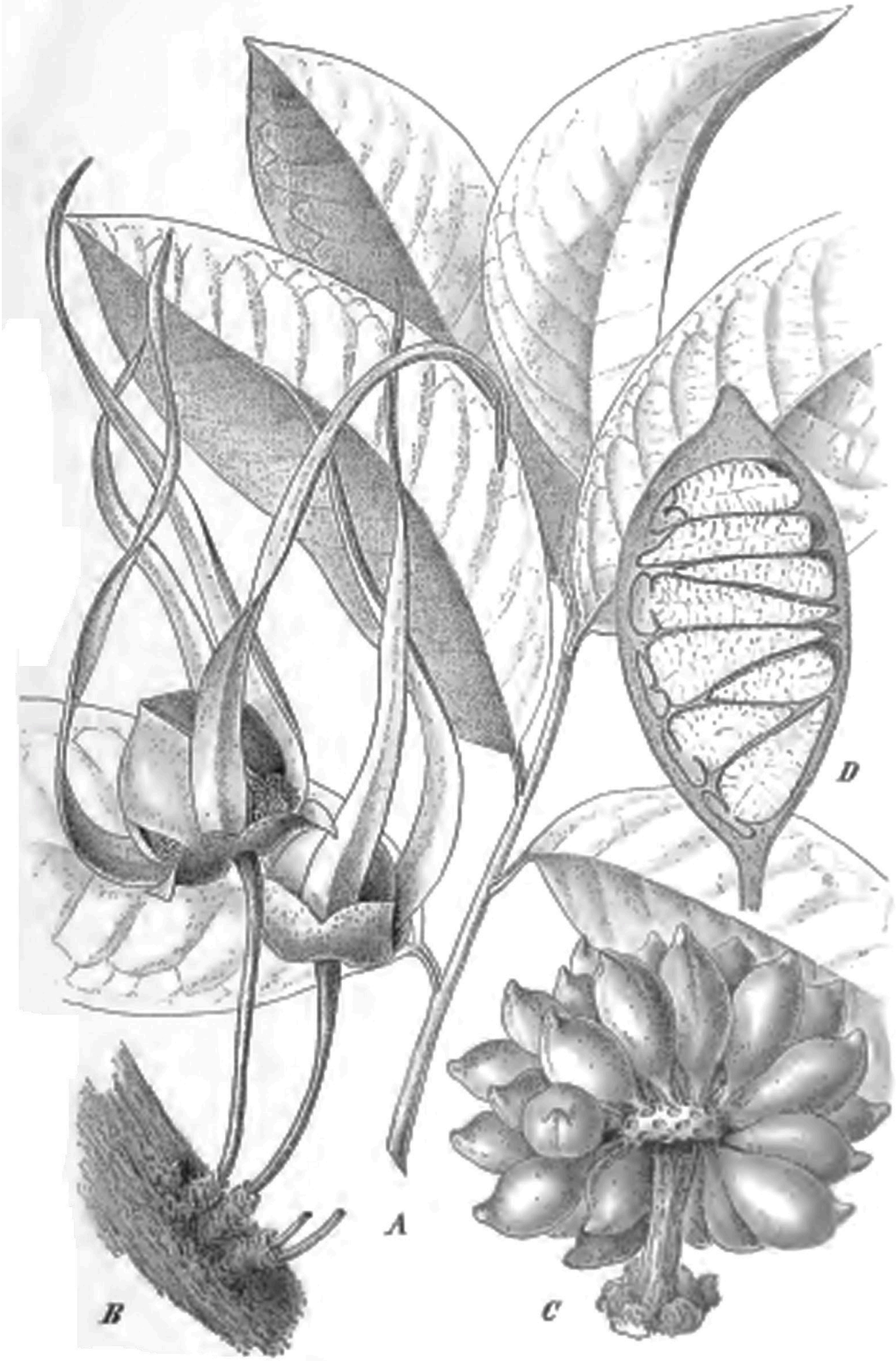
The tall forest of New Guinea gives a gloomy, melancholy impression from the abundance and density of its dark green foliage; in it, you long for light and colour. You positively heave a sigh of relief when you find a tree covered in colourful blossoms. Unfortunately, this happens only rarely, because most of the taller forest trees have very small, inconspicuous greenish-white flowers. Of course, there are exceptions; for example the Lythraceae *Lagerstroemia koehneana* mentioned above is emblazoned in stunning floral jewellery. Strikingly beautiful, if not a great blaze of colour are the flowers of the Anonaceae *Beccariodendron grandiflorum* depicted on Plate13, with several sitting directly on the trunk and later growing into big gorgeous red bunches of fruit.

Plate 12

Wild sago palm (*Metroxylon oxybrachteatum Warburg*) in flower
Finschhafen, New Guinea

(From a photograph by Prof. O. Warburg)

Plate 13



T. Gürke, drawn from nature

Beccariodendron grandiflorum Warburg

A Twig ½; *B* Flower; *C* inflorescence ¼; *D* single fruit in longitudinal section

As we have already seen, the low trees [61] and the forest bushes and undergrowth are rich in beautiful flowers. Of outstanding beauty are, for example, the white, later yellowish, very fragrant blossoms of Rubiaceae *Gardenia hansemanii* which, because of their ornamental beauty, are also planted here and there by the natives; also the flowers of *Randia speciosa*; likewise, a Rubiaceae with a five-metre-long calyx tube is very nice, as is the flower of the Capparidaceae *Crataeva hansemannii*. Also interesting are the large, red flowers of the Acanthaceae *Calycanthus magnusianus* and the red inflorescences of *Antiaropsis decipiens*; the inflorescences, surrounded by bright white bracts, of *Mussaenda* species; the white-flowered *Guettarda speciosa*; he magnificent Amaryllidaceae *Eurycles amboinensis*; the pink-flowering *Impatiens herzogii*, the striking red inflorescences of the Zingiberaceae *Hellwigia*; beautiful *Costus*- and *Alpinia* species; the orange tubular flowers of *Ixora*, and the white of *Pavetta*. Pretty also, are the white flower clusters and red fruits of *Hansemannia*; outstandingly lovely, however, are the bushes of *Clerodendron magnificum* where not only the petals, but also the stamens, pistils, calices, pollen and bracts gleam a magnificent red. The Violaceae *Schuurmansia henningsii* has large panicles with pink blossoms of a violet fragrance; it is a small tree with strikingly large leaves, which is protected in the gardens of the natives, as they like to wear bouquets of the flowers in their armbands.

Also, some lianas have magnificently beautiful flowers, such as the Bignoniaceae *Tecoma dendrophila* with their pink flowers, which often cover the ground when fallen; and, above all, the Papilionaceae *Mucuna kraetkei* and related species with their intense butterfly flowers: sometimes fiery-red, sometimes orange-red; likewise, the beautiful red *Uvaria neo-guineensis* should not be forgotten. The pitcher plants, Nepenthes, are more baroque and graceful than beautifully-coloured; some Asclepiadaceae from the genera *Hoya* and *Ceropegia* have large, extremely interesting flowers, as though modelled out of wax.

But above all, the epiphytic orchids are characterized by some magnificent forms; for example the splendid *Grammatophyllum guilelmi secundi*, *Vanda hindsii*, a number of beautiful or interesting Dendrobiums (*D. spectabile*, *D. hollrungii*, *D. kaernibachii*, *D. cogniauxianum*, *D.warburgianum*, *D. Baeuerlenii*, *D. lawesii*, *D. johnsoniae*, *D. cincinnatum*, *D. rhodostictum* etc), *Vandopsis chalmersiana*, *Saccolabium schleinitzianum* und *S. sayerianuin*, *Cheirostylis grandiflora*, *Cypripedium glanduliferum*, *Latourea spectabilis*, *Sarcopodium grandiflorum*, *Cleisostoma* etc.) They have also attracted the [62] attention of the big orchid dealers; consequently, some have gone into business, and the islands are visited from time to time by orchid dealers. Indeed, so much so that while originally the orchid splendour of the island showed so much promise, it has not retained it. The Dutch region appears to be the most richly endowed in beautiful forms, followed by the German region, and the least endowed is the English region. Also, some epiphytic Gesneriaceae, Ericaceae (*Dimorphandra*, *Rhododendron*) and the parasitic Loranthaceae are characterized by large and beautifully coloured flowers.

As for the actual mountain forest flora of New Guinea, which extends from 900 metres up to at least 1700 metres, and certainly offers many peculiarities, unfortunately we have to be very brief, because we know almost nothing about it. So far, only very few higher ascents of New Guinea peaks have been undertaken; the only botanically-important among them are Beccari's ascent of Mount Arfak, Hellwig's ascent of the Finisterre Range (accompanied by Zöller), and MacGregor's ascent of the Owen Stanley Range. Only Beccari collected any specimens, at mid-altitude, but so far only a portion of his collections have been published, and very little from this mountainous region. MacGregor's collection has been studied by Ferdinand von Müller; Hellwig's by the author, but little could be collected during the ascent and descent by either expedition. From the few plants in herbaria, and the brief notes and public records, the impression is that the basic character of this mountain forest flora is exactly the same as that in the Malay Archipelago. At Finschhafen we visited the Saddle Mountain peak forest, which, though still not quite a thousand

metres high, displays a typical mountain forest character, and adequately confirms this belief. The forest has the stamp of a dense tropical rainforest, but richer in undergrowth and ferns, and in epiphytes than the forest of the plains and lower mountains; the subtropical [63] types so characteristic in the Malay Archipelago (Ternstroemiaceae, Hamamelidaceae, *Ilex*, *Euonymus*, *Symplocos* etc.) have so far not been found, but there is still very much to expect in this direction. From Hollrung's collection, those which may be: *Hypericum japonicum*, *Coriaria papuana*, *Epilobium prostratum* (possibly belonging among the alpine flora and only so deeply in the riverbed), *Gunnera macrophylla*, *Rhododendron zoelleri*, *Cynoglossum javanicum*, *Miscanthus japonicus*, *Zoysia pungens*. It cannot be assumed that the relationship of this flora will be very close to that of Australia, by analogy with the Polynesian and Moluccan mountains.

Further up, at 1700 or 2,000 metres, the summit forest flora begins. It is usually identified, even if not entirely accurately, as alpine flora. Indeed, it corresponds somewhat with the character of the flora of the plains, but not the alpine flora of the temperate zone. It appears to extend as high as 3,500 metres; there, forest cover ends, in the Owen Stanley Range. The slightly-lower Kant or Mount Gladstone in the Finisterre Range is covered in forest right to the summit.

This summit forest flora appears to consist, just like the analagous flora of the Moluccas and Celebes (for example, that of Mounts Sibella on Batjan and Wawo-Kraeng in the southern Celebes, first climbed by the author), of a limited number of smaller, not very close-standing, relatively small-leaved trees. According to Hellwig however, these reach heights of twenty metres or more, at least in the lower regions of this zone. They are covered in a thick coating of moss; bearded lichens (*Usnea barbata*) hang down from the branches; climbing ferns and climbing bamboo pull themselves up on them, a task that is made even easier because the trees usually branch low down, and their branches spread out crookedly on all sides. Since the trees do not grow close together, they let a lot of light through; the forest floor is covered in moss or turf from flowering plants and grasses; the number of ferns is not all too great, although you can still find small tree ferns, and there are also ground-hugging Lycopodieae.

Of exceptional interest is the presence of conifers there, namely the large-leaved *Phyllocladus hypophylla*, which also grows on Kinabalu in Borneo, and the author discovered also on Batjan and Mindanao; and the *Libocedrus papuana*, more reminiscent of a living tree, which the author encountered also in the highest-level mountain forest on Batjan. Furthermore, the large number [64] of mostly very beautifully-flowering rhododendrons is noteworthy, recalling, through their biodiversity, the Himalayan and southern Chinese mountain ranges. Ferdinand von Müller has described five from the Owen Stanley Range and the author an equal number from the Finisterre Range, all new and mostly large-flowered species. Blueberry species (*Vaccinium*) too, are present in large numbers; likewise our own genera *Ranunculus*, *Sagina*, *Hypericum*, *Rubus*, *Potentilla*, *Epilobium*, *Gentiana*, *Veronica*, *Myosotis*, *Senecio*, *Aster*, *Galium*, *Scirpus*, *Schoenus*, *Carex*, even *Taraxacum officinale*, *Aira caespitosa*, *Festuca ovina*, *Scirpus caespitosus* and *Lycopodium selago* and *L. clavatum* are found there, most of them certainly in the uppermost region, near the 4,000 metre peaks of the Owen Stanley Range (on Mount Victoria, Musgrave, and Knutsford). In the lower region of this formation, visited exclusively by Hellwig, there are many forms reminiscent of the tropics and indicative of southern Asia: *Cyrtandra*, *Elaeocarpus*, *Saurauja*, *Cinnamomum*, and the orchid *Ceratochilus*, as well as *Helicia*, *Alyxia*, *Mikania*, *Myriactis*, *Anaphallis*, *Korthalsia*, and *Dendrobium*. However, at 2,000 metres in the Owen Stanley Range, certainly on Mount Musgrave, are found the genera *Drymis* and *Metrosideros*, more indicative of Australia or Polynesia; also, many of the apparently-European species mentioned above are represented in Australia; similarly indicative are the genera *Lagenophora*, *Styphelia*, *Astelia*, *Carpha*, *Uncinia*, *Danthonia*, and *Vittadinia*. Most species are endemic. Of the species of this region, not peculiar to New Guinea are: native also to south Asia and the Malay Archipelago: *Libocedrus papuana*, *Phyllocladus papuana*, *Drimys piperita*, *Potentilla leuconota*,

Galium javanicum, *Korthalsia zippelii* (?), *Gahnia javanica*; to Asia and Australia: *Lagenophora billardieri*; to Polynesia and New Zealand: *Epilobium pedunculatum*; to Polynesia and Australia: *Carpha alpina*, *Sisyrinchium pulchellum*, *Danthonia penicillata*; only to Australia *Astelia alpina* and *Uncinia riparia*; to the Antarctic: *Uncinia hookeri*; Nordic: Festuca ovina and *Scirpus caespitosus*, Nordic and Australian *Taraxacum officinale* and *Aira caespitosa*. So you can see, that even in this region, mostly influenced by Australia, as far as genera and species are concerned the Australian is far outweighed by the Asian, with MacGregor's collection showing a clear preference for the herbaceous forms, while the trees in any case show an even closer [65] relationship to the alpine flora of the Malay mountains. From the sparse information available, the treeless vegetation of the highest peaks of the Owen Stanley Range appears to be nothing other than a continuation of the low plants found among the trees at lower altitude; whether the lack of trees is a consequence of the constantly low temperature, or occasionally particularly cold seasons, or the dryness of the atmosphere, or perhaps the strong winds, still remains to be seen; on the other hand, according to MacGregor geological factors should not play a role here. There is no permanent snow cover in these mountains; accordingly, an alpine flora in the strict sense of the word, such as is found in the tropics, for example on Kilimanjaro could not develop here.

New Guinea Crops

Finally, we must take a look at the crops the natives grow. Taro and yams form the basis of the diet: the former is the tuber of the Araceae *Colocasium antiquorum*; as for yams, they cultivate several species of the genus *Dioscorea*, in particular *D. alata*, *D. sativa*, and *D. papuana*. Potatoes are grown more in the western part, and also along the Ramu. This plant, like many others, has evidently penetrated gradually from the Malay Archipelago. Cassava has only recently been introduced by the Europeans, but is already widespread among the natives. *Tacca* and *Amorphophallus* tubers, although common, are hardly used. In the areas where the palm grows, sago forms a very important basis of food and trade. Originally, grain was not cultivated anywhere by the natives; some corn and rice has now been introduced by the Europeans. Serving as vegetables here and there are some species of beans, for example *Dolichos lablab* and *Phaseolus mungo*, although they play a very subordinate role. *Psophocarpus tetragonolobus* seems to be cultivated rather more. *Vigna sinensis* has so far been observed only in the Bismarck Archipelago, and *Cajanus indicus* only on the Kei Islands. Peanuts and sesame do not seem to have progressed east of the Aru Islands and are not cultivated in New Guinea. In some places *Abelmoschus manihot* is cultivated as a leafy vegetable, as well as *Amaranthus melancholicus* and [66] perhaps other species; here and there an *Alocasia* too. However, the most important throughout the villages is the cultivated sapling *Gnetum gnemon* whose fruits also serve as vegetables. Whether the Araliaceae *Polyscias rumphiana* (*Fanax pinnatum*) and *Polyscias* (*Panax*) *fruticosum*, often planted as hedges, are used as vegetables as in the Moluccas, or even as a medicine, has not yet been determined. Leaves of wild trees, for example *Ficus*, *Sterculia bammleri* (on the Tami Islands) and *Gnetum edule* complete the natives' vegetable bill of fare.

The heart of some palm trees, for example of *Caryota bumphiana* and the young shoots of bamboo species are prized as tasty vegetables. The undeveloped panicles of *Saccharum edule*, often grown as a hedge plant provides a type of tasty cauliflower. Perhaps it represents only a variety of the common wild sugarcane (*S. spontaneum*); you could describe the plant as flowering sugar cane.

Of the cucurbits, principally the edible gourd (*Lagenaria vulgaris*) is cultivated, especially in the young state; and to a lesser extent the pumpkin (*Cucurbita maxima*), the wax gourd (*Benincasa cerifera*), and the more feral watermelon (*Citrullus vulgaris*). Also, a type of melon

(*Cucumis melo*) that looks and tastes just like a cucumber, a so-called 'cucumber melon', is cultivated a lot. The tomato (*Lycopersicon esculentum*) and eggplants (*Solanum melongena*) do not seem to have gone beyond Malay-influenced West New Guinea.

The number of fruits available is very large. The breadfruit (*Artocarpus incisa*), whose stately tree cannot be absent from any village, marks a transition to vegetables. Furthermore, the banana is of outstanding importance. Mangoes play a minor role, especially the indigenous, frequently-wild *Mangifera minor*; also, in the west of the island, the much-better *Mangifera indica* and *M. foetida*, introduced from Malaya with its bigger fruit. The Sapotaceae *Illipe maclayana* (Plate 12) and *I. hollrungii* are grown as local fruits by the natives. *Spondias dulcis* and *Dracontomelum mangiferum* are found to be more conserved than raised. No recently imported fruit has spread as fast as the papaya, which was introduced at Astrolabe Bay by Miklukho Maclay and is still often referred to as the Miklukho Banana; [67] it is found under cultivation deep in the interior. Also, *Annona muricata*, *A. squamosa* and *Passiflora quadrangularis* have been willingly adopted by the natives of Kaiser Wilhelmsland. *Psidium guayava* has spread naturally, as it does everywhere else; it is not known whether *Anacardium occidentale* has done the same. A number of Malayan fruits have not gone beyond West New Guinea, for example *Lansium domesticum*, *Artocarpus integrifolia* (Nangka Malaya), and *A. polyphema* (*Tjampeda* in Malay), and also *Moringa oleifera*, *Sesbania grandiflora*, and the tamarind. Even pineapples and oranges are just beginning to penetrate further, and were unknown in Kaiser-Wilhelmsland a few years ago; the latter were only partially displaced by acidic, wild limes. While the sharp *Averrhoa carambola* is only now penetrating western New Guinea, *Averrhoa bilimbi* is apparently a wild-growing tree in the Moluccas, the Philippines and New Guinea. The rose apple *Jambosa malaccensis* too, seems to grow wild throughout New Guinea.

To be mentioned among wild edible fruits are species of the genera *Garcinia*, *Salacia*, *Antidesma*, *Rubus* (though all pretty bland); *Eugenia* (with cherry-like fruit); furthermore, *Phaleria papuana*, *Cudrania javanensis*, *Ximenia americana*, *Ehretia buxifolia*; the flesh of *Parartocarpus involucrata* is eaten, while the seeds are poisonous; even the scant flesh of *Pandanus fascicularis* is hunted-down. No less abundant is the number of walnut fruit species. Deserving special mention is the beach almond *Terminalia catappa* and its related, palatable *T. kaernbachii*, then the beach chestnut *Inocarpus edulis*, the delicious *Canarium* species, the Sapindaceae *Pometia pinnata*, the roasted seeds of various *Barringtonia* species, and the cyanide-containing *Pangium edule*; the seeds of *Aleurites moluccana* are eaten, the oil is used for rubbing into the skin after bathing. The use of the coconut does not need to be mentioned; on the Tami Islands they even eat the soaked-out seeds of *Bruguiera* together with coconut.

Sugar cane is cultivated in small gardens or as individual canes in virtually every village; the sugar palm (*Arenga saccharifera*) is planted only in the western part (at Dore for example), apparently introduced from the Malay Peninsula.

For stimulants, there mainly comes [68] into consideration tobacco (*Nicotiana tabacum*), raised as individual plants over the entire island; then betel *Piper betle* or, in its absence, wild *Piper* species. It is chewed together with areca nuts, that originate from a widely-grown species, *Areca jobiensis*, endemic to New Guinea, and also from *Areca macrocalyx* in western New Guinea. On the Tami Islands the shoots of *Pouzolzia hirta*, *Myrisyica schleinitzii*, and *Oldenlandia paniculata* serve as surrogates of betel. *Piper methysticum* is often found in the wild, but kava is seldom prepared from it. A variety of ginger (*Zingiber amaricans*) is used as a flavouring, and turmeric; nutmeg is not used nor, probably, are wild peppers. On the other hand, Spanish pepper (*Capsicum longum*) is already widespread in Western New Guinea, and at home also on Astrolabe Bay.

Plant materials serving technical purposes among the natives consist mainly of fibres and plaiting material, woods, and medicinal material; oils (for example the seed oil of *Aleurites*

moluccana) is only for rubbing into the body; dyes play only a subordinate role in small clothes and the few household items.

The most important fibre crop on the island is probably the Papilionaceae *Pueraria novo-guineensis* since carrying nets are made from it; the bast of Sterculiaceae *Abroma mollis* is used for making nets and in addition it is made into ropes; cords and canoe ropes are made from the bast fibre of the beach hibiscus (*Hibiscus tiliaceus*) and the Urticaceae *Boehmeria platyphylla*. Also, a wild banana provides valued fibres; the Apocyneae *Anodendron aambe* likewise provides a useful fibre, at least in the Bismarck Archipelago. Rattan is used mainly, instead of rope, when building a house. For weaving mats, small baskets, and boxes, pandanus leaves are used above all. Besides various grasses they also use coconut palm leaves and nipa palm leaves as roofing material. Men's loin cloths are usually made from *Ficus* bast fibre by beating: for example in Hatzfeldhafen they use *Ficus nodosa*; in the eastern part of the island, both the German and English territories, they use *Broussonetia papyrifera*, presumably introduced from Polynesia, for this purpose. The women's skirts are made of grass. Cotton was only introduced by the Europeans: in the Dutch area by missionaries, in the German area by the New Guinea Company. [69]

Where dye plants are concerned, *Morinda citrifolia*, which is common all over the island, is used for the yellowing of the loin cloths; whether turmeric is used as a dye, we do not know. On the Huon Gulf the juice from stem and leaves of a *Garcinia*, a type of gamboge, serves as yellow dye. The burl of *Cudrania javanensis*, a yellow-wood well-known in Malayan trade, could also provide a beautiful yellow dye. How the blue colour of many of the natives' tools is produced, is still unknown. *Indigofera tinctoria* has not been recorded so far in New Guinea; on the other hand the author found it even growing wild in the Bismarck Archipelago. Today the people of Kaiser Wilhelmsland mostly dye with imported balls of Prussian blue. Red and black are usually produced from mineral substances: haematite- and manganese-containing soil, and charcoal; on the Tami Islands the aril of *Myristica schleinitzii* should give a red dye; *Bixa orellana* has been observed only in the Bismarck Archipelago. Some tannic barks can be used for blackening, for example the bark of mangrove species. The natives do not have green dyestuffs.

Wood plays a major role in house construction, canoe building and paddles, bows and spears, troughs and small devices. When building a house, the wood of *Intsia bijuga* is often used for foundation posts; the natives construct walls and doors from the outer wood of palm trees (for example *Actinophloeus schumanni*). Also, bamboo is naturally used a lot in house construction, as is rattan as a binding material. The wood of *Massoia aromatica* is popular in canoe building, as is the wood of *Lumnitzera coccinea*; the light, yet dense wood of *Sarcocephalus cordatus* is used as a base for canoes. On Tami Island the wood of *Piptadenia novo-guineensis* serves for outrigger booms; there, *Colubrina asiatica* provides hoop wood; a *Macaranga* species provides the pole wood for the sail. *Thespesia populnea* and *Hearnia sapinda* also provide good timber; *Premna integrifolia* supplies hoop wood and is processed into wooden troughs and paddles; the wood of *Cordia subcordata* is used for drums and poles. The mangrove woods are suitable for all kinds of hydraulic structures. Spears are often made from the outer wood of palm trees, bows rarely are, because they markedly splinter; for arrows they use various types of bamboo as well as the stems of grasses, on the Tami Islands for instance the stalks of a botanical rarity, *Erianthus pedicellaris*, straightened [70] and hardened in the fire; for tips they use wood, bamboo, bone and the like. The occurrence of teak has been indicated in New Guinea, but what is to be understood by this is probably the timber of *Intsia maniltoa* and the like, which is indestructible in water, since the occurrence of *Tectonia grandis* there is unlikely; also, *rasamala* wood is said to be found there, but it is by no means the genuine *rasamala* wood of Java, which is derived from *Altingia excelsa.*

The resins and milk saps play only a very minor role in the primitive households of the natives. As 'cement' they use the resin of *Araucaria hunsteinii* and the dried milk sap of the breadfruit tree mixed with *Parinarium* fat. The milky sap of *Ficus* species is used for sealing

canoes. The juice of *Illipe hollrungii* and *Cerbera odollam* serves, with the rubbing-in of dye (charcoal or haematite) as an adhesive; a manganese-containing soil used for dyeing wooden troughs black is rubbed in with the juice of the root bark of *Terminalia catappa*.

The medicinal plants of the natives are numerous, but very poorly known. Kaernbach names *Soulamea amara* (fruits); *Phyllanthus* (tea, for dysentery); *Massoia aromatica* (bark, for severe lung disease). On the Kei Islands the leaves of *Alstonia scholaris* are used against fever; also, *Rauwolfia amsoniifolia* is highly valued there.

Missionary Bammler too, mentions the following as medicinal plants on the Tami Islands: *Erythrina indica* (leaves and shaved bark on the wounds when castrating pigs); *Soulamea amara* (juice of the heated leaves, to combat lice); *Hearnia sapindina* (tea made from the leaves, for new mothers); *Euphorbia serrulata* (cabbage cooked in coconut water, for catarrh); *Codiaeum variegatum* (wild plant as an abortifacient); *Excoecaria agallocha* (bark sap drunk with coconut water as a strong emetic and laxative); *Ocimum canum* (fresh juice drawn up the nose, for catarrh; cooked, as a laxative); *Ricinus* and purging nuts (*Jatropha curcas*) seem to have penetrated only as far as the Aru Islands; *Croton tiglium* has not yet been observed in Papuasia.

Used in fishing, are the seeds of *Anamirta cocculus* and the roots of *Derris elliptica*, at least in the Malay-influenced west. Other poisonous plants exist in quantity, for instance *Strychnos* species; however the use of poisoned arrows [71] has not yet been established. The *Antiaris* genus, within which the dreaded Javanese *upas* tree belongs, has not been found so far, but since it occurs in the Solomons and the Fiji islands, Australia, and the Moluccas, the occurrence of a probably non-poisonous species is fairly certain.

The number of ornamentals is great. First and foremost a decorative item is the ivory-hard spikelet cases of *Coix lacryma* grass, including a cylindrical form (*Coix tubulosa*), then the coral seeds of *Adenanthera pavonina*, furthermore those of *Abrus precatorius*, often sliced Sapotaceae seeds and the purple fruits of *Pollia*; for devils' rattles they need the shells of *Pangium edule* seeds.

The natives show a preference for attractively-coloured flowers and leaves, so you will always find in the vicinity of settlements the beautiful red-flowered *Hibiscus rosa sinensis*; also variegated forms of *Codiaeum variegatum* (our garden croton); red-leaved *Cordyline*; *Graptophyllum pictum* with beautifully-coloured, lined leaves; the red-flowered *Boehmeria platyphylla*, and Amaranthaceae *Celosia cristata*, *Gomphrena gobosa* and *Amaranthus melancholicus* (*var. tricolor*). In the Bismarck Archipelago they also cultivate a red-leaved banana (named *var. Bismarckiana* by the author), and beautiful forms of *Acalypha grandis*; *Clitorea ternatea*, *Caesalpinia pulcherrima* and the like, grow in the wild there. The natives also place store on fragrance, and for this purpose cultivate the Rutaceae *Evodia hortensis* and the Labiatae *Ocymum basilicum* and *O. sanctum*. The Violaceae *Schuurmansia henningsii* is, as noted above, if not cultivated, then at least protected. Particularly for their many feasts and dances the natives decorate themselves with colourful and fragrant leaves and flowers, but in ordinary lives too, they are often seen with fragrant blossoms in an armband.

We do not need further elaboration on the crops of the Europeans since these situations are discussed in detail in subsequent chapters of the book. Plantation operation involves mainly tobacco, coconut, and cotton. Experiments on a larger scale have been momentary, principally in Stephansort, with kapok, ramie, Liberian coffee, Castilloa- and Hevea-rubber, and gutta-percha (*Isonandra gutta*), [72] and also with pepper and cocoa. For feeding the natives, corn, rice, taro, and sweet potatoes are planted, also bananas and pineapples. In the English and Dutch part of the islands there are no big gardens of this sort. Difficulty is actually only a question of workers; the climate and the soil are quite excellent for many valuable crops. For cocoa of course there is the risk of the same disease that has virtually destroyed the crop in the Celebes, the Moluccas and the Philippines; *Hemileia*-danger for the Arabian coffee is less significant.

The highest value should be placed on rubber and gutta-percha cultivation; there are certainly excellent locations for *Hevea* in the great river valleys; *Castilloa* undoubtedly grows excellently. The first samples of *Hevea*- and *Ficus elastica*- rubber grown in Stephansort were quite high prized; but first and foremost the domestic New Guinea rubber trees and their suitability for cultivation should be investigated. Likewise, gutta-percha cultivation in New Guinea has a future, since the climatic and soil conditions are well suited to it, but here too, one should find out about the local gutta-percha species, and attempt to bring it under cultivation. If ramie fibre is developed anywhere in the tropics into profitable large-scale cultivation, then New Guinea is suitable for it; also, there is no lack of suitable areas for jute. The luxuriant growth in the natives' sugarcane gardens already points the way to major sugarcane cultivation; Queensland labours under many unfavourable conditions. Furthermore, just as in Ceylon and Borneo, small factories should be set up in New Guinea too for the production of tanning extracts from mangrove bark. Also, sago processing for export should be taken seriously in hand. For exploitation of coconut shell on a large commercial scale, the existing number of palms at individual locations is probably too low; rather, this could be promoted in the Bismarck Archipelago. First and foremost however, if you want to make New Guinea into a large plantation centre, you need to establish a good connection with Southern China, for the purpose of a quick and easy transfer of a cheap labour force.

VI. The Animal World of New Guinea

Paul Matschie

A glance at a map of the world shows us that New Guinea for the most part consists of still unexplored areas. So far, only the northwest and the southeast, and some seaside areas of the north and the south have become known in greater detail. It is therefore no wonder that news that we have about the fauna of New Guinea seems only patchy, we must be prepared that some remarkable discovery will permeate to us from out of those lands.

Zoologists consider New Guinea, as far as the distribution of animals is concerned, as part of the so-called "southern area", which encompasses Australia, the Papuan Archipelago, and Micronesia, and merges into the Indo-Malayan region via the Moluccas. Wonderful and peculiar animal forms give this region a very strange character. Mammals with beaks; birds with feathers that are shaped like hair; hens that can hatch their eggs by the heat of the sun or the earth; pigeons the size of a turkey; cuckoos that looks like pheasants; rats with climbing tails and other rats with webbed feet; lizards that run on two legs: all of these animal forms contribute to making those areas whose fauna we will consider here, particularly interesting.

The animals living in the southern area are by no means uniformly spread over the whole region, but you have to differentiate a [74] series of small animal-geographic sub-areas, each of which in turn contains a whole number of forms, peculiar only to each. It appears that New Guinea forms such a sub-region; sub-tropical Australia, for example, a second; the Bismarck Archipelago a third. In northern Australia, north of the Tropic [of Capricorn] the animal-world of the Papuan Archipelago seems to blend with the Australian. Of the southern Australian genera, some are represented also in New Guinea, but then more often only by a single variant in the southern Papuan Archipelago.

The influences of this southern fauna extends west as far as the Celebes; beyond, all traces of such remarkable wildlife disappear. Very few families that are at home to us in Europe disseminate as far as the southern region.

New Guinea itself is not a single unit in a zoological sense. The fauna of the northwestern peninsula, shows great similarity with the fauna familiar to Salawatti, Batanta, Misool and Waigeu. The coastal lands in the south-east of Geelvink Bay appears to form a second sub-area; a third, the northeast coast as far as the Huon Gulf; a fourth, the parts of the southeastern peninsula lying to the east of the Owen Stanley Range; a fifth, the coastal lands of Torres Strait lying west of the Owen Stanley Range; a sixth, the rest of the south coast of the island. The Aru Islands are very closely-related in their fauna to that of southern New Guinea, while of the islands in Geelvink Bay: Mysore, Mafor, Miosnom and Jobi, each seems to possess a peculiar wildlife.

Mammals. For Germany, apart from dolphins, whales, and seals, approximately sixty-five species of mammal are known. For New Guinea, there are so far about seventy known species, in addition the ubiquitous rodents: the house rat, the brown rat, and the house mouse, and the domestic dog and feral pig.

Since broad areas of the interior, particularly the mountains, are as yet totally unexplored, it is reasonable to think that that the number of known species will grow significantly over the years, and the discovery of a highly-peculiar large rodent, *Mallomys*, in British New Guinea a few months ago makes it likely that other miraculous [75] animal forms will be found in those areas so far untrodden by white people

Travellers coming from Germany will look around in vain for familiar mammals from their homeland, or mammals that at least have some resemblance to European species. However, in Papuan villages a dog lives as a pet, and around the settlements one not infrequently encounters black pigs, which seem to be in a wild state. Two species have even been made out of these feral,

bristled animals, *Sus papuensis* Lesson and Garnot, and *Sus niger* Finsch. Yet, to the present day scholars disagree strongly about whether these two species do not coincide with Malayan livestock breeds brought to New Guinea by people. Where the Papuan dog, which Finsch precisely describes and depicts in his *Samoafahrten* p.53, comes from, remains, provisionally, still questionable.

The only mammals that have a certain similarity with German species are three bats and some mice. Of the bats, one is a distant relative of our pond bat; the second has a related form in the northern-Italian, white-bordered bat *Vesperugo kuhlii*; and the third is very similar to Schreiber's long-fingered bat *Miniopterus schreibersii*. The mice [*sic*.] belong in part to those parasites represented everywhere on earth: the Norway rat, the house rat, and the house mouse, or resemble our forest mouse in shape but are stronger and bigger. So far, barely half a dozen species are known from there.

Besides these typical representatives of the genus *Mus*, there live in New Guinea large rats that are united in the genus *Uromys*, of which three variants are known so far, from there. Very peculiar are the rats with prehensile tails, *Chiruromys*, with two species, and *Pogonomys* with three species, which are distinguished by the fact that they use their tail for clinging to branches. The beaver rat, *Hydromys beccarii*, has webbed toes, and has a very peculiar set of teeth with only two molars in each jaw. In swamps and rivers it lives on crabs and fish. Besides these genera, belonging to the Muridae, *Leptomys elegans*, and a very strange rodent that Baron Rothschild received [76] in Tring a few months ago from British New Guinea. It is as big as a rabbit with a long, naked tail; its coat consists of a long-haired, tight, black, gray-shimmering fur, from which very long guard hairs protrude; its ears are hidden under the hair. The toes, with the exception of the thumb, which has a short nail, have large, curved claws. Oldfield Thomas, the mammal specialist at the London Museum, gave this strange animal the name *Mallomys rothschildi*. We still know nothing about how these rats live. Unfortunately, no traveller yet has brought us any news about the lifestyle of New Guinea mammals. With these few species of bats and murine animals, the number of those mammals that have any resemblance to German forms is exhausted. In New Guinea one seeks in vain for a squirrel, for a hedgehog, for a hamster or rabbits; no stag or roe deer, no raccoon, no otter, no fox or badger calls to mind European wildlife. All other mammals living there, apart from the dugong, *Halicore australis*, belong to the marsupials and monotremes, or bats that look very different from our German Chiroptera.

The dugong is one of the manatees. The front legs are formed into fins, the hind limbs are missing; the spindle-shaped, body, studded with sparse bristles, terminates in a horizontal, crescent-shaped tail fin. The head is very distended in the snout section, and bent downward at an obtuse angle. The nostrils lie forwards, at the tip of the snout. The dugong lives in pair or in small groups along the New Guinea coasts, where it grazes on the seaweed meadows. Related varieties are spread along the shores of the Indian Ocean as far as the Red Sea and the shores of German East Africa. It is briefly pointed out here that in the seas flowing round New Guinea, our seals are missing, and that so far sea lions are also unknown. As for dolphins and whales, we still have very incomplete information, which is why it is urgently important to report any finding of animals of this sort to the Berlin Museum of Natural History, and to collect as many skulls of marine mammals as possible, so that the species can be determined. [77]

We have already got to know some bats living in New Guinea: *Vesperugo abramus* Temminck, *Vespertilio muricola* Hodgson, and *Miniopterus australis* Tommes. Added to these are about twenty other species that do not have relatives in Germany.

First, there are fruit-eating flying foxes, represented in a number of genera and species. Mostly the eyes fall on the arboreal fruit bats, *Pteropus*, some species of which live together in enormous flocks during the breeding season. They have common sleeping sites in the tops of mangroves, from where they fly out every evening to the food trees that bear their juicy fruit, the Eucalyptus, from whose pungent fruit the bats get a peculiar odour. The giant among them,

Eunycteris papuana Peters and Doria, extends up to ¾ metre and is easy to recognise by its bare back, provided in the juvenile stage only with a narrow, sparsely-hairy, longitudinal tract. Its forefinger carries a claw. A second species is black with a yellow neckband, and a thick coat of hair on its back. In northern New Guinea it looks somewhat different than in southern New Guinea, where it always has a bright eyebrow binding. The northern variant is called *Ptropus chrysauchen* Peters, and the southern *Pteropus conspicillatus* Gould. Similarly, two short-snouted forms without a neck band substitute for each other in the north and the south: *Spectrum epularium* Ramsay in the south and *Spectrum hypomelanum* Temminck in the north.

The bare-backed flying fox *Cephalotes peroni* E.Geoffroy has no claw on the forefinger; it is as big as a flying fox, and the bare wing membranes touch on the back. It stays in caves overnight. This flying fox seems to vary extremely in size.

Besides these bigger flying foxes there are several smaller species, which live mainly on fruit, but occasionally eat flies and beetles, just like the bigger species. The tube-noses, *Gelasinus* and *Bdelygma*, are easily recognisable by their very peculiar physiognomy. The rims of their nostrils are elongated into protruding tubes, which bestow a strange expression on the thick, wide-mouthed face. A larger species, *Bdelygma major* Dobson and a smaller species *Gelasinus cephalotes* Pallas, coexist in the same areas, but appear to be quite rare. [78]

We must mention two species here: the long-tongued flying foxes *Macroglossus* and *Synconycteris*, which have a very long, narrow snout and a broad, far-reaching tongue; only as big as our common bat and characterised by the flight membrane growing to the fourth toe. They live on honey and small insects, which they drag out of the flowers by means of their tongue; but they are said also to eat delicate leaf shoots, flowers and figs. *Macroglossus novaeguineae* Matschie has very small incisor teeth and a well-developed tail wing membrane; in *Syconycteris papuana* Matschie the incisors are much longer than they are wide, and the tail wing membrane is very little developed at the knee joints.

Among the New Guinea small, insectivorous bats, the horshoe bat, *Rhinolophus* is, as yet, unknown, yet it might probably be found in caves. All small bats lack the claw on the forefinger and, unlike the flying foxes, the inner edge of their ear does not arise from the same point of the head as the outer edge, but a little in front of the insertion of the outer edge. The horseshoe bats have an upright longitudinal ridge in the middle of the nose ornament, while in the second group of bats with a nose ornament, the leaf-nosed bats *Hipposideros*, this lengthwise ridge is missing and at least a ribbonlike cross-trim is present in its place. At the moment five different types of leaf-nosed bat have been found in New Guinea. A third species, *Nyctophilus*, has two small transverse leaflets on the nose and a broad, connecting band between the ears. These bats flutter very low above the ground.

The so-called tailed bats, *Emballonuridae*, have no nose ornamentation; in one species, *Emballonura*, which is still not found in New Guinea but probably familiar in the Bismarck Archipelago, the tail appears freely out of the upper surface of the tail wing membrane; in another, the mastif bat *Nyctinomus*, whose presence there is also very likely, the tail extends far out of the posterior edge of the tail wing membrane. A closely-relate genus, *Mormopterus beccarii*, is substantiated, from northwest New Guinea.

Possibly a sac-winged bat *Taphozous* lives on the island. As with the *Emballonura*, the tail pierces through the tail wing membrane, and in the elbow [79] wing membrane an open pocket is located at the wrist. When resting, it hangs by the thumb nail on rock ledges.

So, we see that the bats of New Guinea are characterized by a great variety of forms.

In addition to mice, the dugong, and bats, only marsupials and monotremes live there. The marsupials, or *Marsupialia*, get their name from the fact that in many belonging to this species the teats are located in a bag-shaped pocket in the abdomen, where the young go at a very early stage of development. In some forms the bag is indicated only as a narrow fold of skin. In the marsupial

males the penis lies behind the scrotum. Usually, the tendons of the oblique abdominal muscle [*sic*.] are ossified as marsupial bones. The angle of the mandible is bent inward. In their form, the shape of the teeth, and in their way of life, the marsupials demonstrate very great differences, and animals are found amongst that recall to us very different, familiar forms.

More than forty species have so far been described from New Guinea. Of the real kangaroos, which have evolved the greatest variety of form in Australia to the south, only two species have been recorded: a medium-sized animal with a white waist band, the Papua kangaroo, *Macropus papuanus* Peters and Doria, and a smaller, dark-brown, short-haired species *Thylogale jukesi* Miklukho-Maclay. These kangaroos live on the ground, hop and jump excellently and feed on vegetables. The natives in British New Guinea hunt them with dogs and drive them into nets. The Papuan kangaroo likes to linger in the vicinity of rivers, where it rests during the day in dense scrub. By night it seeks food. Kurt Dahl records in *The Zoologist* (1897, p.215) that, for fear of the crocodiles they dig pits near the water and connect them with the water level by digging a furrow, so that they can drink in safety. Very similar to them are the Dorca kangaroos, *Dorcopsis*, four variants of which live in different regions of NW Guinea and are characterized by having a cowlick on their neck. *Dorcopsis muelleri* is at home in the northwest; *D. luctuosa* inhabits the east; *D. hageni* German New Guinea; and *D. macleayi* the southeast tip of the island. This genus is unique to New Guinea and occurs nowhere else. [80]

The tree kangaroos, *Dendrolagus*, can also be included among the animal forms characteristic of the island; because these strange creatures are to be found only in North Australia, which features so many echoes of New Guinea. They are not absent from any part of the island, and so far four different varieties have been described: *Dendrolagus ursinus* in the northwest; *D. lumholtzi* in the north; *D. inustus* in the northeast; and *D. dorianus* in the southeast. They differ from the real kangaroos notably in the fact that their hind legs are not so disproportionately longer than the front legs, and that their toes are pretty much the same length. The tree kangaroos live in the wildest and inaccessible mountain forest areas, climb very skilfully and spend most of their lives on the branches of trees whose leaves and fruits they eat. They sleep during the day. In all of these kangaroos the big toe is missing, and the hind legs are longer than the front legs.

A second group of herbivorous marsupials is formed by the so-called cuscus, *Phalangeridae*, in which the front and hind legs are about the same length, the great toe is well formed and opposes the other toes, so that the hind limbs serve as prehensile limbs. As with the kangaroos, the second and third hind toes have grown at the base. The forms belonging here are all arboreal, and are well-suited to a life in the crowns of trees by possessing a climbing tail. Among them we find very different animals; some that in their teeth and in their shape are somewhat similar to the lemurs, others that are more like shrews or some Old World rodents.

Most famous of all the New Guinea mammals is probably the genus that is characterized in that between the legs a hairy flight skin stretches out like the flying squirrels of northern Europe and Asia. The Australian representative of this group, the pouched- or sugar glider (see Plate 14) is a regular guest in most zoos. It is a little animal, somewhat smaller than our squirrels, with a silky fur that is ash-coloured, from which a dark, narrow strip runs along the middle of its back. The sugar gliders are spread from the Halmahera group, across Australia and New Guinea, as far as the Bismarck Archipelago; [81] the New Guinea variant, *Petaurus papuanus* Thomas, is distinguished by its particular small size and daintiness. During the day they sleep in cavities in trees or forks in branches. When dusk falls they move quickly and skilfully in the treetops; besides fruits and buds their diet consists of insects, especially moths, and small birds. Their flight membrane serves as a parachute during their broad leaps, during which they are even capable of arbitrarily changing direction during flight. Our image depicts one of these little animals that came from New Britain, and lived in the Berlin Zoo.

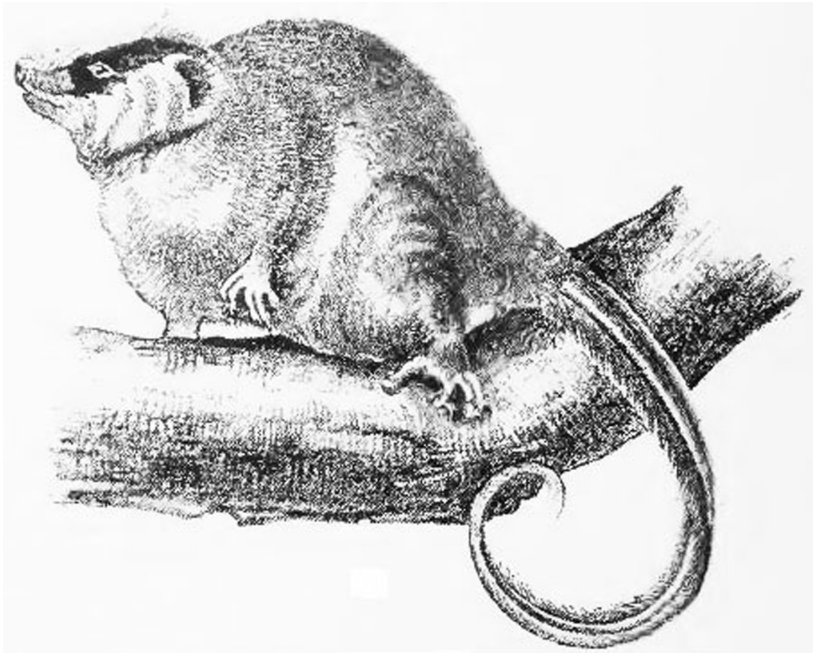
Plate 14

Sugar glider, *Petaurus papuanus* Thomas
After a drawing by Anna Matschie-Held

A second marsupial with a flight membrane is found in New Guinea. In 1892 on a small island on the coast of the northern part of Dutch New Guinea, Baron Rothschild's collector captured a hitherto undescribed variant of the sugar glider that Rothschild called *Acrobates pulchellus.* This little animal probably also occurs in other parts of the island. It is the size of a house mouse; a narrow flight membrane, very little developed on the flank, stretches from the elbow to the knee. The tail looks very strange: it is barely as long as the body, and covered above and below with short hair arranged in two lines, with a fringe of longer hair on the sides. Only in Australia is there a similar species, which resides during the day in holes in trees, and occasionally strays into the tents of trappers staying overnight in the bush.

I would like to call a small marsupial a 'dormouse'. It is about the size of our field mouse; its shape is reminiscent of the house mouse but with a pointed snout. Its ears are large and naked; the hairy tail very thinly hairy and generally similar to a mouse tail, although its extreme tip is naked below and covered with a rough horny skin, thus appearing to serve as a gripping member. Of the four known species, two live in Tasmania; one in southern and western Australia; the fourth, *Dromicia caudata* A. Milne-Edwards, was discovered in the Arfak Mountains of northwestern New Guinea. It has long, soft reddish-brown hair, yellowish-white underside, grey legs and two broad, black bars on its face. Its tail is much longer than its body. The dormouse seems to live on honey and insects.

Not much bigger is the strange feathertail possum [82] *Distoechurus pennatus* Peters (see the figure), with short, bare ears and a hairy tail with two lines. Its white face is adorned by two black bands. Like most marsupials it has a naked, pink muzzle; it is brown on the back, white below. How it lives, we still do not know. So far, it is known in Astrolabe Bay and northwestern New Guinea.



Feather-tailed possum, *Distoechurus pennatus* Peters
After a drawing by Hedwig von Zglinicka

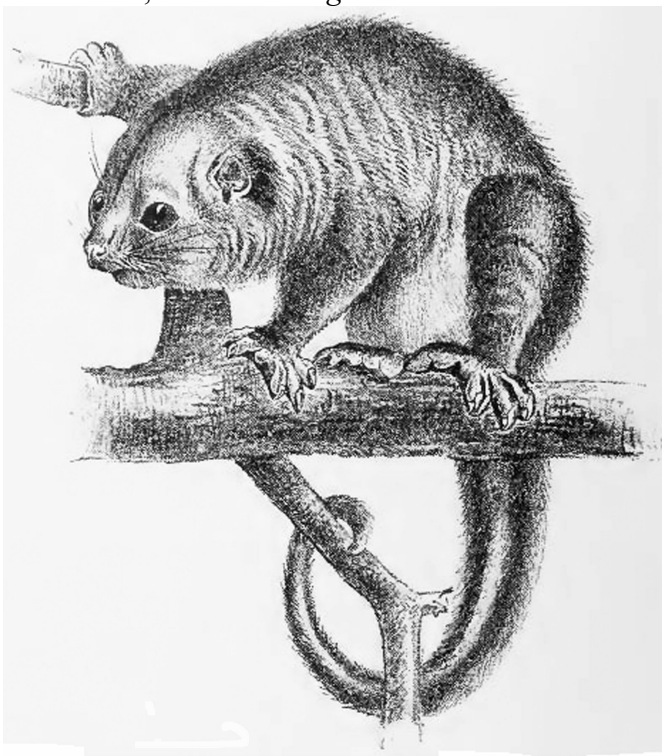
The striped possum, *Dactylopsila* is somewhat larger than a brown rat; it has woolly fur and a long, hairy, winding tail that is naked at the tip. Its body is striped black and white; the fourth toe of the front leg is remarkably long. The animals use it to scratch insects and their larvae from under bark or out of crevices. One variant, *Dactylopsila albertisii* Peters & Doria, is known from

southwest New Guinea; a second, *D. palpator* A. Milne-Edwards, from southern New Guinea; and a third occurs in northern Australia and on the Aru islands.

Remarkable animals are the cuscus, which we find in two sub-genera, *Phalanger* and *Eucuscus*, in New Guinea. These are stocky, hairy, clumsy animals with short legs and a woolly, warty, curly tail that is bare at its extremity. Big eyes, suitable for nocturnal activity, are located in its round head. [83] The cuscus stays in the trees; lives mainly on leaves but probably also consumes insects, birds' eggs, and possibly birds. The genus *Eucuscus* is characterized by completely hairy ears. Only one species, *E. maculatus*, lives in New Guinea; it is widely spread throughout the Papua archipelago. In coloration these spotted cuscus, *E. maculatus* E. Geoffrey, seem highly variable. One finds completely white specimens where only the root of the tail is yellow, and then white, black and red spotted animals. The females are usually mottled grey and white. The inside of the ears is bald in the second group. These grey cuscus always seem somewhat different in different areas, so that so far eight varieties have been described from New Guinea and the neighbouring islands: *Phalanger orientalis* Pallas from southeastern New Guinea; *Ph. intercastellanus* Thomas from the d'Entrecasteaux Islands; *Ph. kiriwanae* Thomas from the Trobriand Islands; *Ph. lullulae* Thomas from the same place; *Ph. carmelitae* Thomas from British New Guinea; *Ph. leucippus* Thomas from the same place; *Ph. mecki* Thomas from the Louisades; and *Ph. vestitus* A. Milne-Edwards from southwestern New Guinea.

The cusus extend from the Celebes through the Moluccas to the Solomon Islands; the mottled cuscus is found also in northern Australia.The natives are very fond of eating them.

As the final group of herbivorous marsupials from New Guinea, we have to consider the ring-tailed possum *Pseudocheirus*. They have short ears, reminiscent of rats' in shape, and have a long, winding tail, bare in the middle of the underside. Of the seven forms identified so far in New Guinea, four: *Pseudocheirus albertisi* Peters and Doria from the northwest; *Ps. coronatus* Thomas from the same place; *Ps. corinnae* Thomas from the east; and *Ps. cupreus* Thomas from the Owen Stanley Range, have a dark, longitudinal stripe along the back; the other three are smaller and daintier and grey in colour: *Ps. forbesi* Thomas from the southeast; *Ps. canescens* Hombron and Jacquinot [*sic.*] from the northwest; and *Ps. schlegeli* Jentink from the Arfak Mountains.



Ring-tailed possum, *Pseudocheirus albertisi* Peters and Doria

Our illustration shows *Ps. albertisi*; it has been reproduced by Miss G. von Zglinicka from an original drawn at the time by Mützel.

The copper-coloured ring-tailed possum *Pseudochirops cupreus* is about ¾ m. long from nose to the tip of the tail; the smaller [84] forms are the size of a rat. They live in mountain forests and are said to build nests that are similar to those of our squirrels. They are found often in pairs especially in eucalyptus and *Terminalia* trees; they appear to feed on the fruits of these trees.

All of the marsupials discussed so far are primarily herbivores. The central incisors in their lower jaws are always the largest teeth in their dentition, and are chisel-shaped, similar to those of rodents. They have been combined in a sub-order of *Diprodonta*.

Now we have to deal with the second group of the marsupials, the *Polyprotodonta*, in which there are at least four small incisors on each side of the upper jaw, and three to four approximately equal-sized incisors in the lower jaw. [85] The canines are the largest teeth in the dentition. The animals belonging here are insectivores or carnivores; some occasionally partake of a vegetable diet.

Among the proboscidian marsupials, *Perameles*, listed as bandicoots or marsupial badgers in Brehm's *Thierleben*, the second and third toe of the hind foot are fused, as in the cuscus, while the first toe is stunted. The hind legs are longer than the front legs. They build nests out of

Striped bandicoot, *Perameles longicaudata* Peters and Doria
After a drawing by Hedwig von Zglinicka

grass in a depression in the ground or in a cavity, hopping like rabbits, sleeping during the day, and feed on worms, insects, roots, and tubers. The species living in New Guinea are all short-haired and the bigger halves of the soles of their feet are hairless. Six species have been described so far from New Guinea: *Perameles moresbyensis* Ramsay has five upper incisors and significant sole calluses on the roots of the toes; it comes from eastern New Guinea; its tail is longer than half its body length. [86]

Perameles doreyana Q.Gould from the north and east with a long snout, and *P. cockerelli* Ramsay from the northwest with a short muzzle both have only four upper incisors on each side and a short tail. The other three known species have five incisors on each side of the upper jaw,

like *P. moresbyensis*, but have no calluses on the soles; *P. longicaudata* Peters & Doria from the northwest, illustrated here, has a long tail that is white on top; *P. raffrayana* A.Milne-Edwards of eastern New Guinea, and *P. broadbenti* Ramsay from southern New Guinea are bigger than the others, and have a much shorter tail.

Recently, Heller described a tailless, long-nosed bandicoot *Anuromeles rufiventris* from Astrolabe Bay.

One could compare the smaller forms of Papuan *Dasyuridae* with the northeast Indian shrews, which zoologists combine in the genus *Phascologale.* These are long-tailed, pointed-snout, graceful little animals that live in trees and capture insects and small birds during their nocturnal hunts. Of the five species known from New Guinea, the long-tailed dasyuroid marsupial *Ph. longicaudata* Schlegel, from the Aru Islands and western New Guinea, is mouse-grey on top, rust-red at the root of the tail, and white on the underside; the striped marsupial shrew *Ph. thorbeckiana* Peters and Doria from western New Guinea is very bright yellow and maroon, with black stripes on its back; the red-tailed dasyuroid marsupial *Ph. wallacei* Schlegel and Müller, from the Aru Islands and western New Guinea, is similar to the preceding one; however, it has not a maroon but a red tail and no distinct, dark frontal stripe. The red-bellied dasyure, *Ph. doriae* Thomas, from the northwest has a black band on its back and an orange-yellow belly; the red-bellied marsupial shrew, *Ph. dorsalis* Peters and Doria, from the same region, is similar to the previous but has a chestnut-red belly.

Brehm calls these animals “marsupial dormice”; however, our dormouse is an herbivorous rodent, a vegetarian, and in no respect comparable with the murderous fellows belonging to the genus of marsupials being discussed here. In his *Hausschatz des Wissens* Heck proposed the name “marsupial weasel” for the genus *Phasgologale*. However, weasels do not climb trees and therefore I still consider the term [87] “marsupial shrew” more valid. However the females of the genus *Phascologale*, like the quoll *Dasyurus*, do not have a prominent chest pouch; rather, the mammary glands are exposed freely on the underside of the body and the pouch is indicated only by a shallow skin fold. Probably by these strange creations the connection of the embryo with the womb is more intimate than in other marsupials and the formation of a placenta proven to some extent. At least, one such has been observed recently in the closely-related quoll.

The quolls, *Dasyurus*, inhabit Australia, and a variant, *Dasyurus albopunctatus* Schlegel, has also been detected in New Guinea. The Papuan quoll looks vaguely like a ferret; it has a soft, dense greyish-brown fur with small white spots on the trunk. The underside is yellowish, the feet dark brown, and the long, fairly short-haired tail is blackish. The quoll lives on small birds, birds’ eggs, crabs, and mice; it is the only large predator in New Guinea.

There remains for me to consider a group that contains the most wonderful creatures in the mammalian world. The echidnas, *Echidnidae*, belong to the so-called monotremes, in which the sexual and urinary organs open out into the rectum, as in birds and reptiles. These animals lack any hint of an ear pinna; the muzzle part of the head is elongated like a beak. No teeth are present; the lacteal glands open directly, without nipple-formation, in fine pores on the belly. In pregnant females a pouch forms around these openings of the mammary glands. The young leave the mother’s body in an early stage of development and, wrapped in the parchment-like covering of embryonic membranes, reach the pouch. There they grow, nourished by the secretion of the mammary glands, which cascade over the membranes and penetrate through them to the embryo.

The montremes are also designated as probably egg-laying mammals because they are said to lay eggs from which the young are hatched. Anyhow, the egg membrane, which surrounds the young monotreme that has emerged from the womb looks vaguely like a reptile egg; but in common parlance [88] the word “egg” is used for a form which is similar to the universally-known hen’s egg, in which the developing embryo is nourished by the food-yolk present in the egg, and from the outside receives only the heat necessary for its development. However, the behaviour of

the monotreme ‘egg’ is quite different, with the embryo being nourished from the outside by the milk fluid emanating from the mother’s body. The young monotreme does not break through its membranes at the moment of birth, as happens in other mammals, but remains trapped in this parchment-like covering in the mother’s brood pouch for a time, and receives milk nourishment after this has penetrated the membranes. Two families of monotremes are differentiated: the platypus and the echidna. Only the latter are represented in New Guinea.

Long-beaked echidna *Zaglossus nigroaculeatus* Rothschild
After a drawing by Hedwig von Zglinicka

The echidnas are ungainly animals, moving about on short legs with strong digging claws. Their snout is drawn out into a thin, naked-skin, tubular beak with the small mouth at the front. A long, wormlike tongue, wet with sticky saliva, is used like that of the anteater for obtaining food, consisting mainly of termites and ants. On the back, the sides of the body, and the short, thick tail there are long spines between the thick hair. The hind legs are directed markedly outwards and backward. On its hind legs the male [89] carries a pierced spur, which is connected with a peculiar gland and is probably used in some way during mating. The echidnas are capable of digging into the ground incredibly fast. They live in sandy soil in rocky terrain, and can curl up like hedgehogs. The three species verified in New Guinea belong to two different genera. The real *Echidna* has five toes on each foot, and a straight, moderately-long, beaked snout. So far it is known only from Port Moresby, and is very similar to the Australian echidna. As *E. lawesi* Ramsay, [*Tachyglossus aculeatus lawesi* Rudloff] it is differentiated as a variant because of its smaller body size and shorter spines partially hidden under the hair.

The two other echidnas from New Guinea, *Zaglossus bruijni* Peters & Doria from the northwest and *Zaglossus nigroaculeatus* Rothschild (see illustration) from western New Guinea, belong to the second genus, *Zaglossus* or *Proechidna*. They usually have only three toes on each foot and their snout is long, and curved slightly downwards.

Birds. Our German avifauna consists of three different groups of species: firstly, those which remain throughout the year in the same country, the resident birds and visitants; secondly, those birds that breed in Germany but leave the country in the autumn: migratory birds; and thirdly, those species from the north that seek out Germany during the winter and remain there for a time as over-wintering guests.

As yet we have no evidence that in the tropics certain species leave their home after the breeding season to spend part of the year somewhere else. However, we do know that within the tropical zone many birds that breed in the northern part of our globe appear as guests during those months that are regarded as winter in the temperate zones.

In New Guinea from September right through into January we find a whole lot of bird species that live in East Asia or Japan. The cuckoo, swifts, the barn swallow, a grey fly-catcher, a wagtail. and many wading birds for example, belong among these winter visitors.

Apart from them, the avifauna of New Guinea does not offer [90] many echoes of those we know in Germany. We miss the buzzard, the eagle owl, the tawny owl, and the horned owl among the birds of prey; we find no turncoat, no woodpecker, and no hoopoe. Jackdaws, magpies, jay, geese and swans, vultures and bustards are unknown there; nor are the finches, buntings, larks and pipits, the wrens, chickadees, warblers, thrushes, robins and nightingales represented there.

However, the parrots, the flycatcher, birds of paradise, the honeyeater and the doves appear in an extremely large number of species, and in the strangest and most colourful forms. New Guinea is home to the curious megapodes and cassowaries.

No part of the world has such a large number of strikingly-coloured birds as New Guinea.

So far, only eighteen species of diurnal raptors have been identified in New Guinea, somewhat fewer than in Germany. A very peculiar one is the harpy eagle, *Harpyopsis Novae Guineae* Salvadori, a large eagle with bare legs. Our sea eagle is represented there by the white-bellied sea eagle *Haliaetus leucogaster* Gmelin, with a white head, neck and tail, and a white underside. It feeds on fish but also attacks the small wallabies. It is said to be trained to catch fish, in MacCluer Bay. As for real eagles, the only one known is the dwarf eagle, *Hieraetus morphnoides* Gould; buzzards and the short-toed snake eagle seem to be absent. On the other hand, there is a kite, *Milvus affinis* Gould; a small hawk-eagle, *Limnaetus gurneyi* Gould; an osprey, *Pandion leucocephalus* Gould, recognizable by the feathered reins area; several buzzard genera: *Butastus indicus* Gmelin, *Haliastur sphenurus* Vieillot, and *H. girrenera* Vieillot; the hawk genus *Baza reinwardti* S. Müller, and the very strange knife-beak hawk, *Machaerhamphus alcinus* Westerman, which stalks bats. The hawks are represented by several species, and constitute the most dangerous enemies of the smaller birds. Among them, the white hawk, *Astur Novae-Guineae* is especially remarkable, because it is totally white, and represents a species living only in the New Guinea region. Also, a sparrow hawk, *Accipiter cirrhocephalus* Vieillot, is known in New Guinea as well as some genuine falcons. Replacing our honey buzzard is the long-tailed honey buzzard *Henicopernis longicauda* Garnot. [91]

We find the nocturnal birds of prey represented by only three genera. The eagle owl, tawny owl, and long-eared owl are missing; as for the little owl, several species of sharp-winged hawk owls *Ninox* occur. The scops owl has a close relative in the Papuan scops owl *Scops beccarii* Salvadori; and the barn owl even has two different forms: a larger one similar to our spire owl, *Strix tenebricosa* Gould, and a smaller barn owl *Strix delicatula* Gould.

While we have found no group peculiar to New Guinea, among the owls and diurnal birds of prey, while only two genera differ materially from those known in the rest of the Old World tropics, the relationships are quite different among the parrots. In tropical Asia and Africa, at the most five species of this most accomplished climbing bird live side by side. In New Guinea about twenty species live side by side in the same area and belong to eighteen genera; and of those eighteen genera only one, the hanging-parrot, has spread to the Indian peninsula; only two others have been detected west as far as the Philippines; four others occur in the Moluccas and Australia; and all others are either restricted to New Guinea or are found only in Micronesia. Of the nine families into which the parrots have been divided by the zoologists, no less than five are represented in New Guinea: the cockatoos, rosellas, dwarf parrots, lories, and eclectus parrots.

Plate 15

Great, black cockatoo, *Microglossus aterrimus* (Gmelin)
After a drawing by Anna Matschie-Held

Of the cockatoos, three live in New Guinea: the white triton cockatoo *Cacatua triton* Temminck, with a sulfur-yellow crest and blue-grey circles round the eyes; the black bristle-head *Dasyptilus pecquetii* Lesson, with a red breast and bare head; and the big black Ara cockatoo (Plate 15) *Microglossus aterrimus* Gmelin, with red, bare cheeks and a tuft of long narrow feathers on its crown. The juvenile Arara cockatoos have a yellow-banded underside. All cockatoos are social birds that nest in old trees or holes in rock; in addition to plant food they also consume insects and their larva; and are to be found in mountainous regions or virgin forest. The natives decorate their fishing lines with the yellow crest feathers of the Triton cockatoo.

The rosellas have a long, stepped tail; they live in large flocks, but prefer more [92] the open plains, where they spend a lot of time round about on the open ground. While the cockatoos are noticeable over a wide area because of their shrill voice, the vocalizations of the rosella are less conspicuous; some species produce quite harmonious vocals. They are very colourful birds that feed mainly on grass seeds. Of these parrots, widespread throughout Australia and Polynesia in numerous species, only one genus is known from New Guinea, whose three species each occupies a particular area. They have a blue back, a yellow-green shoulder patch and a red underside; the females are green with blue markings.

Apart from a few species, the dwarf parrots occur only on New Guinea and the neighbouring islands. They include the smallest parrots known to man. They feed on juicy fruits but also eat insects. Included among these are the ring-necked parakeets, *Psittacula*, about the size of a hawfinch with dark, transverse bands on their backs; a larger and a smaller one live north, and south of the central mountain chain. The dwarf parrots, *Cyclopsittacus*, are very thick-headed with a short tail; they have a powerful tooth cutout on their beaks and are very brightly coloured. No fewer than nine species have been found in New Guinea. In each region there seems to be a larger red-headed form with blue bands on the breast and light blue sides; a smaller form without striking breast bands and with yellow sides; a blue-headed and a brown-headed variant. A quite strange little bird is the woodpecker parrot *Nasiterna*. Barely as big as our wren, they differ from all other parrots in that the tail ends in a thorn-like tip and the toes are very long and thin. They live virtually like our tree creeper, climbing round the trunks like a woodpecker, looking under the bark for insects. One species, *Nasiterna bruijni* Salvadori, has red coverts, all the others have yellow coverts. The latter inhabit separate areas. One species lives on each of the islands of Mafor and Misori in Geelvink Bay; another is found only in the northwest; another in the north; one each in the southeast; north of the Owen Stanley Range; in the southeast; south of these mountains; and in the south. [93]

The lories have a fairly long, low beak, straight on top, and their narrow tongue has peculiar fibres at the tip. It serves for pulling insects out of the flowers and sucking honey. These colourful parrots live in the Papuan forests. Some fly very rapidly and jump around a lot in the branches, others climb around more. New Guinea is particularly rich in these beautiful birds, eight genera with about twenty species can be differentiated. Of the skilful-flying wedge-tailed lories, we mention here only: the green, blue-faced and red-breasted broad-banded lory *Trichoglossus cyanogrammus* Wagler; the green-scaed lory *Neopsittacus muschenbrocki* Rosenberg with yellow-flecked cheeks; the green, mountain lory *Oreopsittacus arfaki* Meyer, with a red crest, and red in the middle of the belly; the Papuan lory *Charmosyna papuensis* Gmelin, a red parrot with a green back, black ‘trouser legs’, red rump, yellow breast patches, and bands on the top of the head: blue in front, black at the back; and the Fair lory *Charmosynopsis pulchella* Gray, which has a red head, is blue-black at the back of the head, with a green back, and a red breast with yellow dots. The broad-tailed lories form another group, among which the black-capped lory, *Lorius lory* Linnaeus, red with a black head and golden wings inhabits the northwest, and the similar, purple-bellied *Lorius hypoenochroa* Gray inhabits the east. The scintillating lories, *Chalcopsittacus*, are included here, coloured either brown like the Dusky lorikeet *Chalcopsittacus fuscatus* Blyth, or green with a

red forehead and blackish crest, like the red-fronted lori, *Ch. scintillatus* Temminck. We encounter very dainty birds in the Blue lorikeets *Coriphilus*. They are characterized by narrow upper-head feathers, and are green with red, yellow, or blue markings.

Forming the final parrot family represented in New Guinea are the *Eclectus* parrots, whose upper beak is arched on the upper edge, and are usually white or red-coloured. Recently, the peculiar Hanging parrots, *Loriculus*, were subordinated here; their upper tail-coverts extend almost to the tip of the tail. These birds scurry around both on the ground and on the branches; they like to hang upside down from the boughs, with heads downward, like bats, and live on honey and soft fruit. The only species in New Guinea, the gold-fronted parrot *Loriculus aurantiifrons* Schlegel, is green, with red upper tail-coverts and a red throat patch. Of the genuine [94] *Eclectus* parrots the green Eclectus parrot, *Eclectus pectoralis* Statius Müller is a resident of New Guinea. Strangely enough, in this genus the female is more brightly-coloured than the male; the female is red, the male green with red flecks and light blue edges to the wings. Virgin forest is the home of these pair-bonded birds. The red feathers of the females are used by the natives as adornment. The great-billed parrot, *Tanygnathus megalorhynchus* Boddaert, is distinguished by a very large beak, a short wedge-shaped tail, and green body colouration. It has a light blue lower back. Another species belongs here; the red-cheeked parrot, *Geoffroyus pucherani* Bonaparte, with a short, straight, truncated tail; it is green and has a red-brown shoulder fleck. The head of the male is red, that of the female reddish-brown, and yellowish-brown on the sides.

We come now to the cuckoos, ten genera of which live in New Guinea in about twenty species. A cousin of our German cuckoo, *Cuculus canoroides* Statius Müller, arrives from areas further west, from September until well into the winter. Close relatives, the *Cacomantis* species, are native to the Papuan archipelago. The small, shining cuckoos, with a splendid green back, *Lamprococcyx*, lay their eggs in the nests of honey suckers and let those birds take the care and rearing of their young. Also, the black koel cuckoos *Eudynamys* do no brooding themselves, but bless crow-like birds with their eggs. In New Guinea the strange grimacing-cuckoo, *Scythrops novaehollandiae* Latham quite at home. It is easily recognizable by its longitudinally-ridged beak with denticles on its cutting edges. It is ash-grey on top and white beneath, with a bare, red eye ring. Besides these tree cuckoos, there are also those that move around in dense bush and appear only now and then at the top of a bush to look around. They resemble small pheasants; call almost like the hoopoe; build open, cup-shaped nests; and do their own brooding. The best known of these is *Nesocentor menebiki* Garner, a spurred cuckoo distinguished by a long claw on the first toe.

A wryneck is just as common in New Guinea as a woodpecker. Of the hornbills, only one species lives in those regions, the so-called wreathed hornbill, *Buceros plicatus* Penn. [95]

It has a maroon head and neck, white tail, and black body. It is the size of a small turkey, and on its beak it bears a whitish horn attachment provided with longitudinal grooves. Its throat and the area around the eyes is bare and coloured pale blue. This bird lives in the tree tops and usually moves by hopping from branch to branch, feeding both on fruits and on insects and small vertebrates, and is thus particularly strange in that the female, brooding on the white eggs in a hollow tree, is walled-in by the male in such a way that only a small gap remains free through which she receives the food. If we have before us the easternmost species of a family represented in the Old World tropics by numerous forms, then the same is true for the sole bee-eater living in New Guinea, *Merops ornatus* Latham, which, like the swallows, performs its flight games in flocks in the air and, like the ground swallows, nests in colonies on the edges of streams, or on hillsides. In the main, it is coloured green; a slender bird, the size of a bright woodpecker, with a long, thin, straight beak.

The hoopoe family is not represented in New Guinea; on the other hand, that bird group to which our kingfisher belongs, has developed very diversely there. We already know of eleven

genera of twenty-five species. A species very similar to our kingfisher, *Alcedo ispidoides* Lesson, comes to the Papuan archpelago in winter, probably from Japan. Otherwise, the narrow-beaked fish birds are represented only by the three-toed fishers *Halcyon*, small forms resembling the kingfisher, which nest in burrows, perch on branches above the water surface and by diving at speed from there catch fish and water insects. All other Papuan species belong to the kingfishers with a broad beak that nest in hollows in trees, and hit insects and reptiles that they have spotted from an observation post in a lightning-fast strike. The frog kingfisher [shovel-billed kookaburra?] *Clytoceyx* is the strangest form of them all. Its beak is very short and broad, and bears a certain resemblance to the mouth of a frog. The hook-billed kingfisher, *Melidora*, has a fairly broad bill whose tip is bent downward into a hook. The laughing kookaburra, *Dacelo intermedius* Salvadori, is so called because its tones are like those of a human's laugh. The beautiful paradise kingfishers, *Tanysiptera*, [96] have a layered tail whose central feathers are very much elongated and narrow, with a spatulate widening at the end. A number of tree kingfishers, *Cyanalcyon*, *Sauropatis*, and *Syma*, live in the forest, and the small, three-toed kingfisher, *Ceyx*, hunts near rivers. The rollers in New Guinea represent our blue roller. There we have the blue-green rollers with a black tip of the tail, *Eurystomus pacificus* Latham, and the blue-tailed, thick-billed roller *E. crassirostris* Sclater, which live in holes in trees and feed on insects and small vertebrates.

The crepuscular rollers include the frogmouths, *Podargus*, and owlet-nightjars, *Aegotheles*. The frogmouths look vaguely like large nightjars with a very flat and wide beak, rigid bristle feathers over the slit-shaped nostrils which are situated at the root of the beak, and a soft plumage. They build their nests in the forks of branches and hunt insects during the night. A bigger and smaller species are known in New Guinea. The owlet-nightjars are similar to them, but are only as big as our nightjars; in lifestyle they differ from them in that they nest in holes in trees.

The nightjar itself is represented in New Guinea in a form very closely related to the German species. In addition, there is a second species, and two further species of twilight swallows, *Eurostopus* and *Lyncornis*, which have a very short beak and lack the beak bristles.

Also, a cousin of our swift, the Siberian swift *Cypselus pacificus* Latham appears during the winter from its homeland in the Amur lands. Other genera remain the whole year long in New Guinea, for example the spinetailed swift, *Chaetura novaeguineae* Salvadori, whose tail feathers have rigid shafts, towering over the feather barbs at the tip like thorns, and the tree-swift, *Macropteryx mystacea* Lesson, with a long, forked tail and remarkably elongated white beard feathers and eyebrow feathers which do not nest in caves or tree hollows like the other, previously-mentioned swifts, but use saliva to build a tiny nest of moss and feathers, fastened onto a branch.

Three types of swiftlets, *Collocalia*, occur in New Guinea, a very small swift with extremely short little feet. These swift-flying birds are the makers of the well-known [97] edible swallows' nests, highly-prized particularly in China, which adhere to rock faces, in the shape of a profile-cut cup, made from the saliva of swiftlets, which hardens rapidly in the air.

Very colourful birds are the pittas, *Pitta*, somewhat larger like thrushes, with very long legs and strikingly short tails. The black-headed pitta, *Pitta novaeguineae* Müller and Schlegel, is green with a black head and neck and red breast; the Papuan noisy pitta, *P. simillima* Gould, has a maroon, black-striped head, green back, wine-red breast, and black tail; the black-throated pitta, *Pitta mackloti* Temminck, is olive-green above, wih a red breast, brown head and a black throat band. The pittas hop around in the bush and build open nests, like our nightingale.

There are also swallows in New Guinea: a barn swallow, *Hirundo gutturalis* Scopoli, from East Asia which occupies its winter quarters here, and the Javanese swift *Cecropis javanica* Sparrm. Added to that is a tree martin *Petrochelidon nigricans* Vieillot with a red forehead.

The flycatchers, *Muscicapidae*, which are represented by four species among us in Germany, appear very numerous in New Guinea. One species, similar to our grey flycatcher is a

winter's guest, and at home in East Asia, *Muscicapa griseosticta* Swinhoe. So far, no fewer than 17 genera containing 80 species have been detected.

The so-called bristled-rumped *Campephagidae* take their name from the peculiar shape of their rump feathers, which, in these birds that look like flycatchers, are rigid and bristly at the base but suddenly become fine and soft towards the tip. Included here, among others, are the cuckoo shrike *Graucalus*, a grey bird with black markings, and the black and white flycatcher-shrike *Lalage*: all in all, four genera of about twenty species.

The shrikes too are well-represented in New Guinea. Although all closer relatives of our German shrikes are missing, we find seven different genera with about forty species, such as the black and white marked crow shrike, *Cracticus*, and the colourful bullheads *Pachycephala*.

The crow-like birds are represented in New Guinea only by a black crow, *Corvus orru* Müller, and a grey raven [98] with a bare face and black wings, *Gymnocorax senex* Lesson. There are no jackdaws, magpies, jays, or spotted nutcrackers in New Guinea.

In contrast, here is the homeland of the raven-like Birds of Paradise, which are distinguished by velvety feathers like reins. Nearly fifty species, in some twenty genera, of these magnificent birds are known in New Guinea. It would far exceed the space assigned to me were I to portray only the finest of these birds, in the most wonderfully dazzling colours, and adorned in the most peculiar formations of feathers. The Paradise orioles, *Manucodia*, appear the most simple;

The Wimpel bird-of-paradise
After a drawing by Hedwig von Zglinicka

they are as big as jackdaws and coloured yellow and black like orioles. I would like to mention the king bird-of-paradise, *Cicinnurus regius* Linnaeus whose secondaries are tattered at the outer web; the magnificent long-tailed astrapias *Epimachus*; the real birds-of-paradise, *Paradisea*, with long, tattered and crimped axillaries, which are coloured beautifully yellow, white, a glorious blue, or red. Others again have long feathers in the inguinal region; others bare-shafted, looking like wire, sometimes with spatulate or round long feathers, ornamented with end-flaps adorned with shield markings, on the head, tail, or back. One of the most remarkable species is shown here, the wimple bird of paradise. [99]

The bower birds, *Chlamydodera*, have become famous because of a peculiar habit. They build, namely from twigs, long, high bowers, which they overlay with blades of grass and decorate the entrance with colourful snail shells, mussel shells, bones, pebbles, and feathers. In these arcades the courtship games take place.

Our oriole is replaced in New Guinea by the stippled oriole, *Mimeta*, and the naked-eye oriole, *Sphecotheres*. The black drongos, *Dicruropsis*, also belong here, with their frontal feathers like bristles, bent backwards.

There are no true starlings there, but rather, related genera such as those similar to ravens: the mynas, *Mino*, with a bare skin-flap; the glossy black starling, *Calornis*, whose neck is adorned with lance-shaped feathers; and the long-winged woodswallow, *Artamus*, which looks like a swallow in flight.

The weaver birds, represented in numbers elsewhere in the tropics of the Old World, are represented here by only a few nun-finches *Munia* and *Donacicola*, cinnamon-coloured, thick-billed little birds that live in flocks on the grassy flats.

True finches are missing in New Guinea: the sparrow, hawkfinch, chaffinch, greenfinch, the black-headed goldfinch, the European goldfinch, the serin, and linnet. You will also look for the bullfinch, crossbill and buntings in vain. Likewise missing are the longclaws, wagtails, and larks; only the East Asian wagtail, *Motacilla melanope* expands its autumn migration as far as Papua.

A bird group also to be mentioned, extraordinarily well represented by species in New Guinea is the honey-eater, the tip of whose tongue is divided, and either frayed or armed with lashes. These birds live on plant nectar and on the insects that are found among the flowers. They move about in part like our tomtis, and in part like the warblers, and build open nests.

Approximately twenty genera with sixty species are known so far, from that region. Especially remarkable are the hump-beaks, *Tropidorhynchus*, with a hump-like process on their bill, and the small, green silvereyes, *Zosterops*, with a crown of white feathers around the eyes.

The flower-suckers, *Nectariniidae*, have a tongue specialized for sucking from flowers, but it is designed differently from that of the honey-eaters — it can be extended a long distance out of the beak [100] and has a longitudinal groove on the upper surface; its tip is divided into two smooth threads. The beak of the flower-sucker is very thin and curved. Two genera are represented in New Guinea: the black, iridescent green *Hermotinia* species, divided into seven geographically-representative forms; and a yellow-breasted *Cyrtostomus* species.

The flower-pluckers, *Dicaeidae*, which inhabit the Papuan Archipelago in six genera of fifteen species, are as big as our firecrests.

Of the treecreepers, *Certhiidae*, in Germany we have the true treecreeper, *Certhia*, and the nuthatch, *Sitta*. In New Guinea lives a small nuthatch, *Sitella papuensis* Schlegel; a treecreeper, *Climacteris placens* Sclater; and a short-beaked, tomtit-like, spurred bird *Orthonyx novaeguineae* Salvadori.

Tomtits, wrens, warblers, leaf warblers, reed warblers, kinglets, thrushes, dippers, wheatears, robin redbreasts, and nightingales are not to be found among the birdlife of New Guinea.

For all these songbirds, the babblers occur. They differ from the singers by having a long first pinion. The scimitar babblers, *Pomatorhinus*, with a long, sickle-shaped, curved beak, are very strange. Representing our thrushes, are the quail-thrush *Cinclosoma*, and the rail-babbler *Eupetes*. A grass-warbler *Cisticola*, is reminiscent of our reed-warbler; the wagtail babbler, *Grallina*, is reminiscent of the wagtails.

We have already seen that certain families of birds, such as the birds-of-paradise, the honey-eaters, the fly-catchers, and the parrots are especially developed in New Guinea in terms of species. If one speaks of the characteristic forms of birds of the Papuan Archipelago, one must not forget the doves. Nineteen genera, with about seventy species, enliven the forests and grasslands. They are, for the most part, beautifully-coloured birds. The metallic-green, brightly-marked flame-footed doves, *Ptilinopus*, have very delicate, thin beaks.We will mention only the Superb dove, *Ptilinopus superbus* Temminck; it has a red-violet crown, reddish-brown neck, white chin, grey

front part of its neck, blue breast band, and a green back. The fruit-doves, *Carpophaga*, are roughly the shape of our wood pigeon. A few of them, the so-called wattle pigeons, *Globicera*, have a [101] black or red bulge of flesh at the root of the beak; one species, *Globicera pacifica* Gmelin, the red-bellied fruit dove, has a black bump on its beak, a dark grey head and neck, white throat, green back, and red-brown abdomen; it lives in the south of the region. A second, the knobbed fruit-dove, *Globicera myristicivora* Scopoli differs, due to its wine-coloured neck and dark tail. Others, the true fruit doves, are similar in colour to the others, usually green on the back, with a grey, burgundy or bluish head. Others again are mainly white, like the dove, *Myristicivora bicolor* Scopoli with black wings and a black end to its tail, in western New Guinea; and the similar dove of peace, *Myristicivora spilorrhoa* Gray, with grey, black-lined wings and black-spotted coverts, in southern New Guinea.

The cuckoo-doves, *Macropygia*, are slender with very long tails; their colour is usually red or cinnamon; head and neck are typically paler. From New Guinea comes a thick-beaked species, *Reinwardtoenas reinwardti* Temminck, and two thin-beaked species: the barred cuckoo-dove, *Macropygia doreya* Bonaparte, with a banded underside, and the smaller Papuan cuckoo-dove, *Macropygia nigrirostris* Salvadori, monocoloured below. Turtle-doves are missing in New Guinea. The transition from the cuckoo-doves to the ground doves is provided, to some extent, by the shed pigeon, *Geopelia tranquilla* Gould, a very small dove with black and white banded crops and a wine-coloured breast. Colourful, is the bar-shouldered pigeon, *Erythrauchoena humeralis* Temminck, with a grey head, black-banded back of head, coppery neck, brown back seamed in black, and a pale underside. The ground doves, *Phlogoenas*, have red feet and bare legs; the emerald doves, *Chalcophaps*, stand out because of their splendid colours. They are easily recognizable because they have several different-coloured bands on their rumps. The pheasant pigeons, *Otidiphaps nobilis* Gould in western New Guinea and *Otidiphaps cervicalis* Ramsay in the southeast, are quite peculiar. They are as big as wood pigeons, although their shape is reminiscent of a pheasant; the variant from the northwest is copper-brown with a deep blue back, green tail and head, green neck bands and a black underside; the southeastern species does not have a crest, and has a very black head. Even more remarkable are the crowned [102] pigeons, *Goura*. They are as big as pheasants, and on their heads is a crown of upright, tattered feathers, which in some species are widened into spades at the ends. Among some Papuans these pigeons are kept as house pets. In every wildlife region of New Guinea we find a variety of crowned pigeon.

Finally, I have to mention the beautiful, collared-dove *Caloenas nicobarica* Linnaeus, which has a hump on the root of its beak, a collar of long, narrow feathers around its neck, and is beautifully coloured. When the sun's rays fall on its back, it shimmers in a magnificent green, blue, and brass-yellow. The head of this pigeon is black, and the tail white.

In New Guinea the true fowls are represented only by quail. No partridge, no grouse, no pheasants are to be found there. The Papuan quail, *Synoecus cervinus* Gould, is chestnut red and black banded. Besides that, a small button quail with a maroon neck band, *Turnix melanonota* Gould, lives there.

Among the fowls, the remarkable mound-builders, *Megapodiidae*, occur in New Guinea; they are remarkable for the way in which they bring their eggs to maturity. Namely, they do not nest like other birds, but either they scratch together big piles of leaves and plant debris, sink their eggs into this, and hand over the breeding business to the warmth of fermentation (*Talegallus*), or they dig holes in the sun-warmed sands of the seashore or in those places where hot springs deliver a higher temperature to the soil of volcanic regions, and locate their eggs there (*Megapodius*). The young birds leave the egg fully feathered. So far, three genera of nine species are known from New Guinea. The brush-turkey *Aepypodius arfakianus* Salvadori, has a fleshy wattle on the front of its neck and a comb on the forehead. The big-footed scrubfowl *Megapodius*, has a thin beak, darker

colours and a short tail; the thick-beaked scrubfowl *Talegallus* are distinguished by a longer tail and stronger beak.

Of the rail-like birds, in Germany we have the coot, *Fulica*; the moorhen, *Gallinula*; three swamp-hens, *Ortygometra*; the corncrake, *Crex*; and the reed rail, *Rallus*. [103]

Although there are no waterfowl in New Guinea, there are, rather, a moorhen, *Gallinula frontata* Wallace, with a red frontal plate; also two swamp hens, *Amaurornis moluccana* Wallace, and *Ortygometra cinerea* Vieillot; a corncrake, *Megacrex inepta* d'Albertis & Salvadori; and several forms like our reed rails, such as *Hypotaenidia*, *Rallina*, and *Ealabeornis* species, which are in part quite colourful. In addition there is a purple gallinule, *Porphyrio melanopterus* Temminck, with a horn plate on its crown and a blue underside.

Among the plovers, *Charadriidae*, we find a smaller and a bigger pratincole, *Glareola*; a pied oystercatcher, *Haematopus longirostris* Vieillot; our common turnstone *Strepsilas interpres* Linnaeus; a curlew *Oedicnemus magnirostris* Geoffrey; our black-bellied plover *Squatarola helvetica* Linnaeus; the Siberian golden plover *Charadrius fulvus* Gmellin; and several smaller plovers *Aegialitis* that to a greater extent reach tropical New Guinea only during migration in winter. Characteristic of the Papuan Archipelago is probably only one lapwing, *Lobivanellus miles* Boddaert, representing our [German] lapwing. It has peculiar skin flaps on the sides of its head.

The waders too bring us only familiar manifestations. Stilts (*Himantopus*); phalaropes (*Phalaropus*); waders (*Calidris*); sandpipers (*Tringa*); redshanks (*Totanus*); godwit (*Limosa*); curlew (*Numenius*); snipes (*Scolopax* and *Gallinago*); take off from eastern Siberia for New Guinea in winter. They are very similar to our German species. Small, comb-crested jacana, *Parra gallinacea* Temminck, run about on ponds covered by broadleaf plants. Their long toes enable them to hurry deftly over the shaky surface.

Bustards, cranes, and flamingos are not present in New Guinea; the storks are represented only through the Australian jabiru, *Mycteria australis* Shaw, a giant stork with a shiny black head and neck, black wings, tail, and lower back, and otherwise white plumage. An ibis, *Ibis strictipennis* Gould, lives there too, and the Hungarian common brown glossy ibis, *Plegadis falcinellus* Linnaeus is also not rare in New Guinea.

Of the herons, we have a night heron *Nycticorax* [104] *caledonicus* Gmelin; a bittern, *Botaurus heliosylus* Lesson; a dwarf heron *Ardeiralla flavicollis* Latham; a cattle egret *Bubulcus coromandus* Boddaert; several white little egrets; a grey heron; a spoonbill; and some smaller species, all forms that also have very close relatives elsewhere in the Old World Tropics.

True geese and swans do not exist in New Guinea, and even the ducks are quite poorly represented. A pygmy goose, *Nettopus pulchellus* Gould, with a glossy green back; two tree ducks *Dendrocygna*: one with a maroon chest, *Dendrocygna arcuata* Cuvier, and one with a greyish-white underside *Dendrocygna guttata* Forster; furthermore, two wild ducks: the Australian wild duck *Anas superciliosa* Gmelin, with green patches surrounded in black on the wings; and the chestnut teal *Anas castanea* Eyton, which corresponds with our teal, with a chestnut underside. Finally, a very peculiar shelduck should be noted: *Tadorna radjah* Garner, which is similar to our common shelduck.

The coasts of New Guinea are inhabited by frigate birds, *Fregata aquila* Linnaeus, and *Fregata minor* Brisson, skilful flying birds the size of a cormorant, with deeply-forked tails, very long narrow wings, and a long curved beak, hooked at the top. They nest in trees and go out very far from land. Three species of gannet, *Sula*, are among the most common coastal seabirds. They breed on cliffs. By the rivers, the stranger darter, *Plotus novae-hollandiae* Gould, lurks for prey; and the cormorants *Microcarbo sulcirostris* Brandt and *M. melanoleucus* Vieillot apply themselves to catching fish.

Plate 16

Bennett's cassowary, *Casuarius bennetti* Gould
After a drawing by Anna Matschie-Held

A pelican, *Pelecanus conspicillatus* Temminck, inhabits the estuaries *en masse*, and the beautiful tropic bird *Phaethon candidus* Brisson, a tern-like bird with long, narrow, central tail feathers, nests on tranquil sea cliffs.

Some petrels are occasionally seen at the mouths of the larger rivers or near the seashore: a small petrel, *Fregatta grallaria* Vieillot; two shearwaters, *Puffinus*; and a dove petrel, *Prion turtur* Kuhl. In all these petrels the nostrils are located in horny tubular processes on the beak. On their winter migration south, the European tern, *Sterna anglica* Montagu; the dwarf tern [105] *Sternula sinensis* Gmelin; and a black tern, *Hydrochelidon hybrida* Pallas, come as far as the Papuan tropics. Ten other terns that inhabit New Guinea are widespread over the seas of the tropical zone, including the gannet tern *Anous*, which builds nests of branches on low brush.

Seagulls and auks do not seem to occur in New Guinea; on the other hand, two grebes can be found on the rivers: *Tachybaptus gularis* Temminck the sides of its head black, and *Sylbeocyclus tricolor* Gray, with maroon temples.

The Order of ostriches is represented by the cassowary, *Casuarius*, a large bird with a hairy plumage and several long, bristly feather shafts in place of flight feathers. The head and the upper part of the neck are bare, and vividly coloured; a large, often-divided colourful wattle hangs at the throat, and a horny helmet sits on the forehead. No fewer than ten species have been described so far, from different regions of New Guinea. The cassowary depicted, *Casuarius bennetti* Gould, (Plate 16) is from the Bismarck Archipelago.

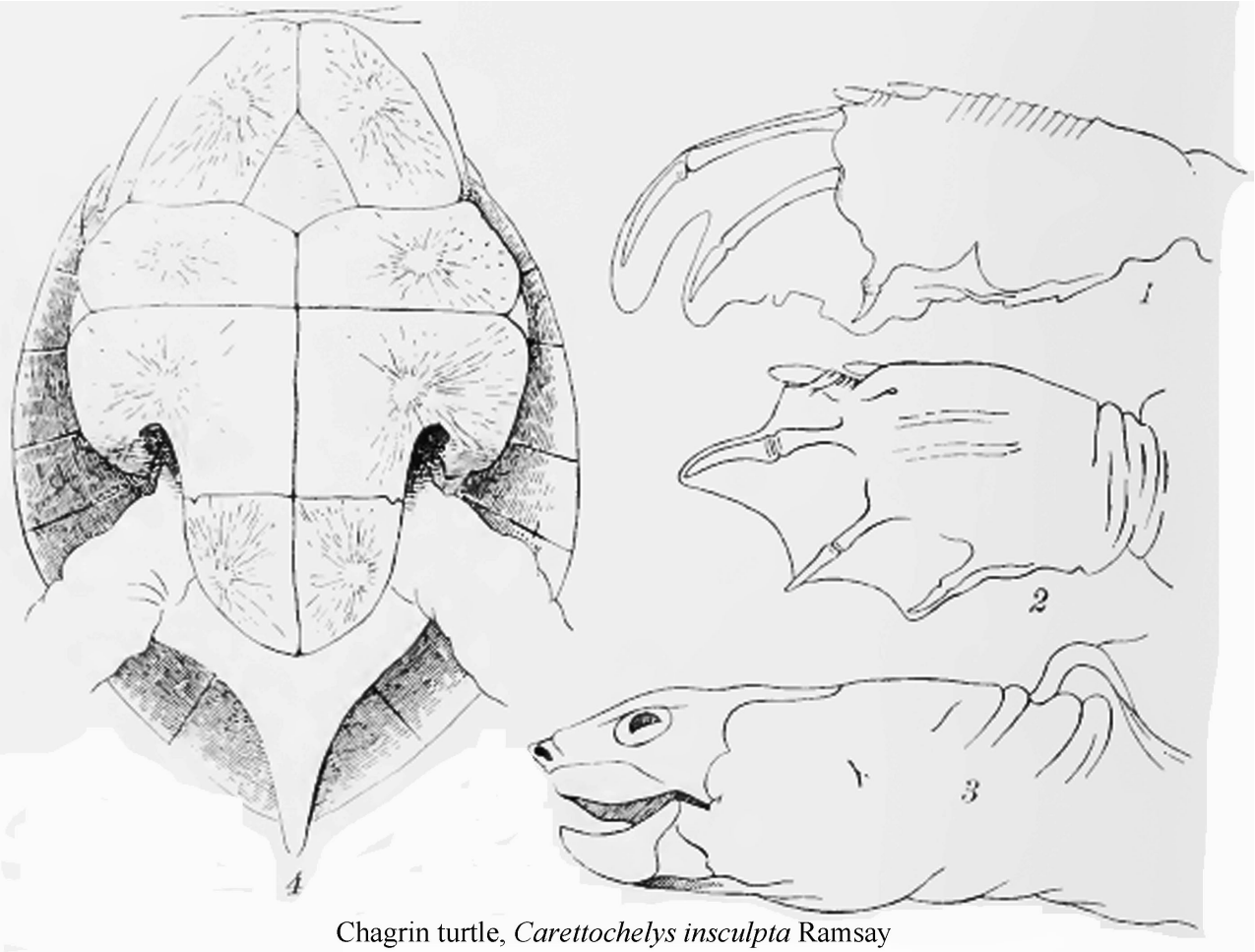
Reptiles. Among the mammals and birds we can recognise at least some species that show a somewhat close relationship with German forms. As for reptiles, New Guinea has not one species that is represented also in Germany.

The Papuan turtles belong to four families. Firstly there are the sea turtles with fins for feet, that the natives relish hunting on the coast.

As Herr Krieger says, they catch them in a peculiar manner. One man binds a rope round his arm and where there is a turtle he dives under the water, holds it with both arms and lets himself be pulled to the canoe. A second man fastens a rope to the foot of the turtle and then the animal is pulled into the canoe. Apart from the giant leatherback turtle, *Sphargis coriacea* Linnaeus, whose shell is covered with a leathery skin and five markedly-projecting longitudinal keels, two other sea turtles are found on the coast of New Guinea: *Chelone mydas* Linnaeus, and the hawksbill turtle *Chelone imbricata* Linnaeus. [106] The latter provide tortoiseshell. The shell of the leatherback turtle measures up to two metres long; that of the other two types is one metre at most. In 1886 Ramsay described a third, very peculiar genus of gliding turtle with finned feet, the Chagrin-turtle *Carettochelys insculpta*. As our figure shows, it has a long, front toe connected with a fin, a heart-shaped carapace, and a very short tail. The carapace is not covered in horny plates but by skin with small, round, rough patches. Since so far only one specimen of this peculiar turtle has become known, I recommend all travellers who have the opportunity of visiting the larger rivers of New Guinea to observe this animal most earnestly.

Otherwise only a single family of turtles is known elsewhere on the island, that of the river turtles, *Chelydidae*, with a very long neck, which can be laid sideways under the rim of the shell and not drawn backwards as in our German pond turtles. They are represented by two [107] genera: the long-necked turtles *Chelodina*, and the Papuan turtles, *Emydura*, which are at home in Australia as well as in New Guinea. They live in the rivers.

Of crocodiles we know of only one species from New Guinea, the ridged crocodile, *Crocodilus porosus* Schneider, a widespread species from the Indian subcontinent to the Fiji islands. It got its name from a bony ridge that extends from the eye to the tip of the nose, on each side of the head. The crocodile is gladly eaten by the natives.



Chagrin turtle, *Carettochelys insculpta* Ramsay
1 Front fin *2* Back fin *3* Head and neck *4* Shell from beneath

The lizards that occur in New Guinea are very different from German lizards. There are neither blindworms nor true lizards there. Also, of the other families which inhabit the tropical and subtropical parts of the rest of the Old World, several are totally missing, such as the worm lizards and the chameleons. Only bearded dragons, goanas, burrowing lizards, and geckos exist there. However, there are also two most peculiar families: the flap-footed lizards and the legless lizards.

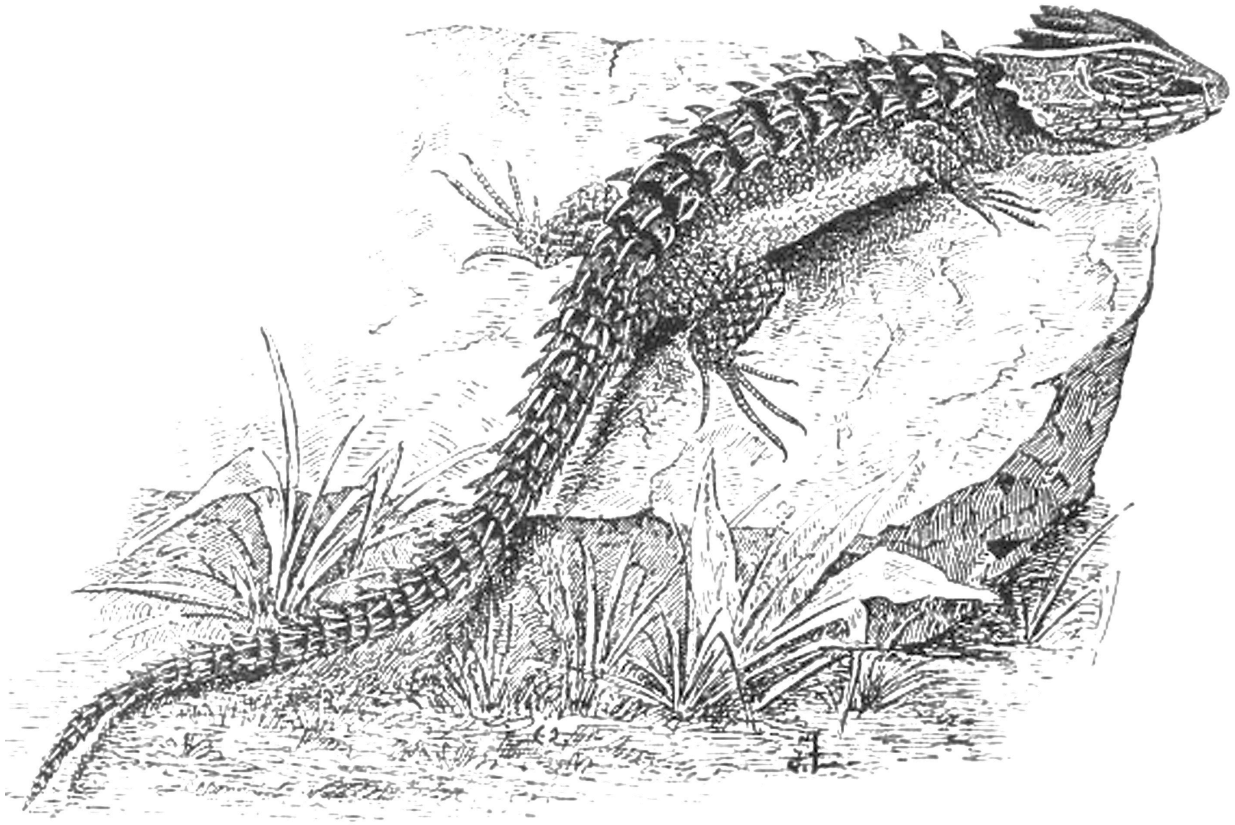
The geckos, *Geckonidae*, are distinguished by the fact that the large eyes have a slit-shaped pupil; the eyelids are missing, and so the epidermis continues over the curvature of the eye like an hour glass. The body is covered in small granular scales and powerful claws are located at the end of the toes. The tail breaks off easily. All geckos live on insects, soft snails, and worms. These animals are said to have a loud vocalization. Four genera are known from New Guinea: namely five species of long-toed naked fingers, *Gymnodactylus*; a disc-finger, *Hemidactylus*; a large gecko, *Gecko*; and a scaly-toed gecko, *Lepidodactylus*.

The flap-footed lizards, *Pygopodidae*, take their name from the remarkable rudimentary formation of their legs. The back legs are shaped like flaps while the front legs are totally absent. The body is like that of a snake. The flap-footed lizards are nocturnal animals. The most well-known species, *Lialis burtoni*, resembles a blindworm and has only a hint of posterior extremities.

The iguanian lizards, *Agamidae*, have a head covered in irregular scales. Several species run on their hind legs, like the wattle-throated agamid *Gonyocephalus*, which has a keeled throat-sac in front. These are represented by several species. A second group are formed by the *Physignathus* agamids, whose throat sac does not have a keel. [108]

The biggest lizards found in New Guinea belong to the monitors, *Varanidae*. They are about half a metre long, with a long head and long tail, a deeply-divided tongue, roundish curved shields surrounded by rings of very small granular scales on their backs, and big plates arranged in transverse rows on their undersides. One species, *Varanus indicus*, the Australian mangrove monitor, lives by water; a grey species, *Varanus gouldi*, and a green species, *V. prasinus*, are found in stony areas.

Three genera of burrowing lizards, *Scincidae*, are known from the region. They are easily recognized by their cylindrical neck, which is continuous with the head, and the hexagonal, imbricated, superimposed shiny, broad scales, which are just as big on their undersides as on their backs.



Crocodile skink, *Tribolonotus novaeguineae* Duméril & Bibron
After a drawing by Hedwig von Zglinicka

The strangest burrowing lizard about which anything is known, lives in New Guinea. The crocodile skink, *Tribolonotus novaeguineae* Duméril & Bibron, is a lizard about the size of our green lizard. Its back is covered by four rows of large, pointed protuberances which continue onto the long tail [109] the head extends into a helmet, that bears six pointed spines at the back; the legs are reinforced by keeled shields. Thus, we have before us a skink whose appearance is reminiscent of that of a crocodile. Nothing is known about how the animal lives.

The largest skink of the Papuan Archipelago is the giant banded skink, *Tiliqua gigas*, a yellow-throated, beautifully-banded, shiny lizard that is as big as a small monitor.

Quite characteristic of New Guinea are the writhing skinks, *Lygosoma*, a smaller, very lively and brilliantly coloured species, of which some thirty have been described from here alone. They live on the ground, in dry, sandy areas.

Widespread in the tropics, possibly transported by ships, is the snake-eyed skink, *Ablepharus boutoni*. It looks like a small blindworm, but has four short legs. Its eyelids are immobile and transparent.

Below the ground lives a very weird, small lizard, extending from the Celebes to New Guinea, with no legs, and missing both external eyes and an outer ear opening. This is the legless lizard, *Dibamus novaeguineae*.

The snake fauna of New Guinea is no less strange than the other vertebrate classes discussed so far. Only three of the big families into which the snakes are divided, are represented here: namely worm snakes, boas, and grass snakes. Vipers, i.e. poisonous snakes with big pierced fangs located forwards in the jaw, are absent from the Papuan Archipelago. On the other hand, the venomous adders, *Elapidae*, which have one or more poisonous fangs with a groove anteriorly, behind a number of solid teeth, have developed in an astonishing variety. Almost a third of the snakes living in New Guinea belong in this group.

Under broken-down shelters, in rotting wood, or in the earth live a few ancient worm snakes, *Typhlopidae*, belonging to the genus *Typhlops*. They feed on small insects and earthworms, they have a worm-like shape, and their eyes are hidden under their head shields.

The giant snakes show a hint of hind limbs that project, claw-like, alongside the anus. There are large snakes that feed on smaller vertebrate [110] animals. From New Guinea one knows the amethyst python, *Python amethystinus*, and the diamond python, *Python spilotes*. In addition there are two species with three pits on each side in the lower lip scales. These are characteristic of the southern region: the chin-pit python, *Liasis*, in two species; and the green python, *Chondropython viridis*. Finally there is a keeled-scale boa, *Enygrus carinatus*, which is distinguished by keeled body scales.

First to be named among the vipers are those covered in warty protuberances, the wart snakes, *Acrochordinae*, which live in the rivers and hunt frogs and fish. The Malayan wart snake, *Acrochordus javanicus*, has prickly thorns on its upper body; it is almost two metres long and is spread from the Sunda Islands to New Guinea. Even better adapted to life in the water is the keeled-belly viper, *Chersydrus granulatus*, which, likewise, has prickly, humped scales, and is easily recognizable because of a keel-like skin fold in front of the markedly-compressed tail. Its distribution extends from the coasts of continental India as far as New Guinea. They live at considerable depths.

The true vipers are represented by only a few forms. On the other hand, there are several tree snakes, *Dendrophis*, which have edged abdominal scales. Rich in species are the colubrids, *Dipsadidae*, of which half a dozen species of nocturnal tree snakes, *Dipsas*, are known from New Guinea; and the water snakes, *Homalopsidae*, whose nostrils are on the upper surface of the snout. As already mentioned, one third of all the Papuan serpents belong to the poisonous snakes, *Elapidae*. Probably the most common venomous snake is the red-bellied black snake *Pseudechis porphyraceus*, with red-rimmed lateral scales; also the death adder, *Acanthophis antarcticus*, with vertical pupils and a curved sting at the end of the tail is not uncommon.

We cannot go into greater detail here on the various forms of these venomous snakes; it is only mentioned that there is no news of dangerous outcomes from poisonous bites to humans in New Guinea. Also, in the rivers, and in the seas that wash the New Guinea coastline live venomous snakes that strike by means of a broad tail compressed into the shape of an oar. These are the flat-tails, *Platurus*, [111] with big belly scales; the black and yellow seasnake *Hydrus*; and the rowing snakes *Distira*.

Amphibians are not distinguished in New Guinea by a great wealth of species. Salamanders and newts are totally absent, and, likewise, all the tailed amphibians and the caecilians are not represented by a single species. Also, we have no information about true toads, *Bufo*, from the Papuan Archipelago. The Papuan frog, *Rana papuana*, and the mountain frog, *Rana arfaki*, are

related to our *Rana* frogs. Besides them, the family of true frogs is represented by a genus *Cornufer* extending westward as far as the Philippines. Two species of this genus live in New Guinea: *Cornufer corrugatus* and *C. punctatus*. From the family of *Microhylidae*, New Guinea possesses only two genera, each of one species: *Sphenophryne cornuta* and *Xenobatrachus ophiodon*. Both are small, toad-like amphibians with a short, pointed head and thick body.

The toad-frogs, *Pelobatidae*, to which our spadefoot toad belongs, have developed quite peculiarly in New Guinea. The forms belonging here present three completely peculiar genera: *Butrachopsis*, *Asterophrys* and *Ranastcr*. All the other *Anura* belong to the tree frogs, *Hylidae*, which stay up in the foliage. Seven species of *Hyla*, close relatives of our German tree frog, and a *Hylella* have been described from there.

We can be brief about the fish of New Guinea. What we know about them, is very little: sea fish, including sharks and rays, rise in the rivers; nothing at all is known about true, river fish. Genera that are peculiar to New Guinea have not yet been found. All species are widespread throughout the Indian Ocean.

Snails and mussels too offer us hardly especially remarkable forms; the genus *Helix* is represented there by a subgenus *Papuina*. The natives use sharp-edged shells as knives; pieces of Tridacna as fishhooks and axes; Triton shells as trumpets.

The insects are characterized by an immense wealth of very colourful forms. The space assigned to me, prevents my going into greater detail about these sometimes very beautiful species.

Among the butterflies I just want to mention the 15 cm wide *Ornithoptera*, which has very long antennae, triangular, velvet-black [112] forewings, and small emerald-green posterior wings decorated with polka dots. Of the beetles, the *Cetoniinae* and *Carabidae* are very well represented, but the *Cerambycidae* above all show great variety. Among the longhorn beetles there are extraordinarily-beautiful, shiny, metallic-coloured forms.

Trepang, dried Holothuria

Of the lower animals, probably the sea cucumbers have the greatest significance for the natives of New Guinea, apart from the larvae of some ephemera, that are collected and eaten, or used as fishing bait. The coasts of New Guinea provide a lot of trepang. The larger, thick-skinned sea cucumbers are caught using trawl nets or by divers, cut up, dried, and smoked. They form a major trading product with China, where they are softened in warm water and then consumed as a delicacy.

About the invertebrates that inhabit New Guinea, summarizing works that present more than purely systematic-fannistic lists or descriptions of newly-found species are so far rarely found in the literature. Knowledge of the Papuan fauna is still so sketchy that we are not yet in a position to give a general overview of the lower animals living there. [113]

VII. Kaiser Wilhelmsland

1. Coast and Surface Form

Kaiser Wilhelmsland, the northeastern section named after Kaiser Wilhelm I, extends from 2° 31' to 8° S. and from 141° to 148° E. The western border with the Dutch territory initially forms the 141st meridian until its notional intersection with the fifth parallel south; then the border runs south of the Victor Emanuel Range, cuts the Blücher and Müller Ranges, and stretches north of the Sir Arthur Gordon Range as far as the intersection of the 144th meridian with the sixth parallel. Then the border continues north of the Albert Victor Mountains to the intersection of the 147th meridian with the eighth parallel, which it follows eastwards to the coast.

According to current information Kaiser Wilhelmsland covers a surface area of about 180,000 square kilometres, and is therefore roughly half the size of Prussia. The population is estimated as one quarter- to half a million; but since the country has been only partially explored and, for obvious reasons a population count has yet to take place, this information is only conjecture and certainly there can be no claim of accuracy.

The first promontory on German territory is Germania Point. Following Germania Point, as far as 142° E., from north to south is Robidé Point, Koner Point, Eendracht Point and Baudissin Point. The first major river in German territory is the Sechstroh, [114] named after the first mate of the *Samoa*. The river has a depth of seven fathoms at its mouth, which is unfortunately obstructed by a bar; it empties at 2° 32' S., 141° 2' E. Opening southeast of it, north of the third parallel, are several smaller rivers: the Ratzel, Thorspecken, and Gossler. The coast from the Dutch border to 3° S. and further southward as far as Cape Dallman is forested, mountainous country. Intervening green hangings, like mats, afford a friendly resting place for the eye. The first major bays east of Humboldt Bay are Friedrichsen Bay and Angriffshafen. At his attempt to explore the latter more closely, in 1827, Dumont d'Urville was strenuously obstructed by hostile natives; the harbour owes its bellicose name to this event. The designation "Angriffshafen" does not fit the facts, according to the detailed investigation and account of the late Governor Schmiele, since the site that Dumont d'Urville named "Anse d'attaque" lies completely open to the north and northeast, and the sea from southeast or northwest passes at full strength round the small reef to north and south (*Nachrichten über Kaiser Wilhelmsland*, 1894, p.46). Also, the natives have not shown themselves to be hostile either during Finsch's visit or later; however they have always shown a certain reluctance towards Europeans.

Beyond Eendracht Point the mountains come close to the shore and, following a coastline fringed with casuarinas, there extends from Baudissin Point right to the Albrecht River and beyond, vast, densely-forested foothills with coconut groves and many settlements: the Brandenburg coast. This is undoubtedly a future copra-rich area. Opposite, lie the Tamara (Dudemaine) and Sainson Islands. The Sainson group consists of the islands of Aly (Faraguet), Seleo (Sainson) and Angél (Sans souci), the last being the smallest and most densely populated. The islands of Ali and Seleo, connected by reefs, form a horseshoe-shaped basin: Berlin Harbour, at 3° 7'S., 142° 35' E. The island of Angél lies south of Seleo and is only about one hundred metres long and wide. The best entrance to Berlin Harbour, between Ali and Tamara islands, is totally clear of reefs, with a depth of about thirty metres; on the other hand, [115] an easily recognizable reef surrounds the entire island of Seleo. Crossings between Ali and Seleo, and between Ali and Angél islands are not yet as sufficiently reconnoitered as that between Ali and Tamara (in the spring of 1890 by S.M.S. *Möwe*), and are therefore not recommended for passage, moreover because of their narrowness (*Nachrichten über Kaiser Wilhelmsland*, 1896, p.64).

The final point of the Brandenburg coast is marked by the pretty village of Tagai on the Albrecht River. According to Finsch, in view of the force of the river flow, this site would probably be suitable for establishing a sawmill. Between the Gossler and Albrecht rivers empty the less important Hann, Arnold, Joest, Bastian and Lagoon rivers; and south of the Albrecht River, flow the small coastal rivers: Lindemann, Brensing, Behm, and Petermann. North of the latter, on the Cascade River, lie two to three settlements, and south of it, between Guido-Cora Point and Sapa Point are eight flourishing coastal villages, each with ten to twenty houses. Between Virchow River and Paris Point we again have several natives' coastal settlements. The rich stands of coconut palms on the Brandenburg coast continue on the islands of Tarawai and Wallis (or Bertrand and Gilbert Islands) offshore to the southeast. Both of these islands have a protected harbour on each of their southeast coasts, and in their interiors a lake of clear fresh water, enclosed by hills. In a southeasterly direction from Tarawai, Kairu or Chagur (also called d'Urville Island) can be reached in only a few hours. South of it is the elongated island of Gressien, with Musehn as its principal village. The island is very infertile, and so the inhabitants have planted their gardens on Kairu. This has Victoria Harbour on its western side, and in the interior of the island rises a high, elongated ridge. The hilly slopes of Gressien Island are covered in quite extensive areas of grassland. West of this island lie the small Nyuho Islands, making a friendly impression with their coconut palms planted by the inhabitants. South of the Gressien Islands, and north of Bessel Point projecting from the mainland, is the small Babuin (Meta) Island. Between these two islands, Dallmann Strait leads into Dallmann Harbour, discovered by O. Finsch on 12 May 1885. Dallmann Harbour and Berlin Harbour belong among the best anchorages in the north of Kaiser Wilhelmsland. Roughly [116] thirty kilometres south-east of Dallmann Harbour begins the "Cham" district, called Yamir" in the Tamara language, stretching along the coast and densely covered in coconut palms. A sandy beach several kilometres long separates the territory of the Cham people from that of the Suwain people; in between both districts are a few small villages that are not on a good footing with either district. The coastal area between Suwain and Dallmann Harbour is mountainous and sparsely populated; only in the interior are coconut palms seen, soaring on the mountain ridges (*Nachrichten über Kaiser Wilhelmsland*, 1898, p.47 *et seq.*). Inland from Gauss Bay, south of Dallmann Harbour, the natives have created several settlements on the Herbert River. The Hansemann coast begins with Siemens Point, and extends as far as Cape de la Torre. Offshore are the Le Maire Islands, named after the Dutchman Jacob le Maire, who in 1616, together with Willem Schouten, was the first to set foot on the islands. The group comprises the islands of Roissy, Deblois, Jaquinot, Garnot, Hirt, Blosseville, and Lesson; on the latter an active volcano is in eruption. On Hirt there is a large stand of coconut palms. In a north-easterly direction, the Purdy Islands are located between 2°50' and 3° S. They consist of Bat Island, Mole Island, and Mouse Island; the densely-wooded coral islands are remarkable for the myriad of birds (pigeons, chickens, seagulls) that nest there, and a bad memory due to the New Guinea Company's steamer *Ottilie*'s coming to grief there and being wrecked in 1891. The coastal form opposite presents the same, monotonous character for thirty miles, almost to Krauel Bay — vast flats with stands of casuarinas and nipa palm, which are indicative of swampy terrain. A series of low hills stretches further inland. Only a few water courses drain this area. The Caprivi River, and the even less significant Eckardtstein and Hammacher Rivers, open into Krauel Bay. The coastline juts out repeatedly in Sahl-, Kortüm- Ritter-, Richthofen- and Casuarina Points.

About 3.5 nautical miles south-east of Cape della Torre, a flat plain with stands of casuarinas, there opens, at 3°52' S., 144°32'E., the proud [Empress] Augusta River. It was discovered by Finsch [117] during his fifth Samoan trip, and was subsequently navigated and explored in greater detail at various times from 28 July to 26 August 1886 by von Schleinitz, and from July to November 1887 by a scientific expedition of the New Guinea Company. According to their information the river does not have a bar at its mouth, but sandbanks on either side and a

depth of of only five fathoms there. The width of the stream is 300 – 400 metres on average; the depth of the central channel fifteen fathoms; and the speed of the current 3½ nautical miles per hour. The main current direction is WSW – ENE. Its banks are occupied alternately by palm-like marsh plants, coconut palms, casuarinas, breadfruit trees, sago palms, and high reeds. In the south it is accompanied by a mountain range, in the north only by individual low ridges. Twenty-five to thirty nautical miles up, it is a mountain stream because it has to break through a mountain of gneiss, mica schist, and quartz. Lakes and ponds cover the banks of the middle reaches, and are often connected to the main stream by muddy outflows. To the best of our knowledge so far, the river is navigable by smaller steamers for about 380 miles. According to the members of the scientific expedition that explored the river, the best suited would be small, shallow-draft paddle steamers:

Natives of Malu

with these, all four tributaries, with a depth of 3–4 metres and only a relatively small width, would be navigable. The first of the known tributaries enters at 142°2’ E, 4°18’ S. [118] The furtherest point reached so far is 141°50’ E, 4°13’ S. The presumption of the discoverer, that this river would provide a navigable waterway deep into the interior, like the main river of British New Guinea, is thus fully confirmed. In von Schleinitz’s opinion, in the rainy season the river is navigable even further than apparent so far, and therefore well suited for opening up large tracts of the German protectorate. In any case, the source of the main river is located on the central chain in Dutch territory, while the first two tributaries, opening at 142°25’E, 4°16’S, and 142° E, and 4°17’S, most likely originate in the vicinity of the headwaters of the main river of British New Guinea, the Fly. The last native settlements reached on the Augusta River were Mangi and Zenap at about 142°20’E, 4°15’S. Further eastward, downstream, between 142°50’ and 143° E, the village of Kiranni lies on the left bank of the river, with Mechau, Malu, Awalib, Yamboney, and Tshusbandei on the right bank.

The next promontory east of the Augusta River is Fransecky Point; and between this cape and Venus Point two further rivers both empty into Broken Water Bay. These are the Prinz Wilhelm River, and south of it, at 4°1’ S., 144°35’ E., the major Ottilien River, frequently

mentioned recently. Venus Point is a promontory of the wooded flat country that extends a long distance here, up to a chain of low hills that stretches along the coast. The Ottilien River is identified as the Ramu, discovered and explored by the Lauterbach and Tappenbeck expedition, but also owes its discovery to Otto Finsch, and was first navigated in July and August 1886 by Baron von Schleinitz aboard the *Ottilie*, from which it derives its name. At its mouth the river had a breadth of one hundred metres, but widens upstream to a breadth of four hundred metres, which it maintains at a distance of ten kilometres from the coast. The depth at the mouth is four metres, later increasing to eight metres. Rich loam forms the river bottom. At a distance of eight nautical miles from the coast the river receives two small tributaries. Recently, the river has been the subject of much discussion; the Kaiser-Wilhelmsland Expedition in 1896 led to the assumption that the [119] Ramu River, discovered by this expedition and navigated some distance downstream, is identical with the Ottilien River, an assumption that has been confirmed by the recently dispatched Tappenbeck expedion, as we have seen.

Observations by this expedition revealed that the water level in the river is subject to very strong, and sudden changes: that is at its highest in the months of March and April and then, with marked fluctuations drops until September. Tree trunks bogged down in the river may, on some occasions, especially at low water, form considerable obstructions to navigation. However, these can be by-passed. From the point where the Lauterbach Expedition lauched their fleet of canoes on 3 August 1896 (Lauterbach, in *Nachrichten für Kaiser Wilhelmsland* 1896, p.36), and travelled downstream with many difficulties, the river initially turns west at an average depth of four to five fathoms. A number of small tributaries join it from the left side, out of the Bismarck Mountains.

After a distance of some five hundred kilometres, it then turns directly north, and is two hundred to three hundred metres wide at this point. The mountain recedes further and is up to only a thousand metres high. A hundred kilometres further on, the expedition withdrew on 15 August 1896, because of a lack of supplies. During the return journey, from a suitable vantage point near the spot where the expedition had embarked, it was determined that the river wound a hundred kilometres further up the valley at roughly the same breadth, and most likely has its source in the south-eastern part of the Bismarck Range and the Krätke Range, and on the southern slopes of the Finisterre Range (Lauterbach, 1898, p.163). The plain that could be overlooked from there stretched quite a long way, apparently beginning beyond the Finisterre Range and following the Bismarck Range northward, broadening markedly. As manifested by the rising columns of smoke during the day and the fires at night, it seemed to be well populated.

Between Venus Point and Hansa Bay the coastline makes a fine, arable impression. It is densely covered with *alang-alang* (tall, reed-like grass) [120] approaching right to the beach. West of Hansa Bay the presence of large stands of palms betrays the presence of numerous villages. The bay itself offers a good anchorage, ten fathoms depth and protected from the wind. Lying in the bay is the small, flat, wooded island of Rombi (Laing) which, by virtue of its wealth of palm groves, would be well suited as a copra station. On the mainland opposite lie several native villages: Jaguda, Sangur and Big, while Stephan Strait passes between the mainland and Volcano Island (Manumudar [Manam]) to the northeast. There is an active volcano (1300 metres) on the island. The three prominent capes on the island are named after our three Hanseatic cities: the northern Cape Bremen, the southern Cape Hamburg, and the eastern Cape Lübeck. The next bay to the south, Potsdam Harbour, is only six fathoms deep; in it lies the small Kirchhof Island. A beautiful sandy beach begins here; a good stand of coconut indicates the fertility of the area. Prinz Albrecht-Hafen provides the next coastal inlet; a wooded headland divides the southern part of the harbour into two pouch-like sections running about a mile inland. From the Empress Augusta River as far as this harbour, the land seems fairly even. In the bay that forms Prinz Albrecht-Hafen lie the Nielsen Islands, and south of them are uninhabited islands —the Legoarant Islands. The next gash in the coastline is formed by Hatzfeldt Harbour, and in it Mahde Island, called

Tschirimotsch by the natives. The harbour, which was incorporated and surveyed by His Majesty's cruiser *Adler*, forms several coves: Dalua-, Banim-, Bilan-, Tschirimotsch- and Tombenam bays. Between Tschirimotsch and Tombenam bays the coastline projects as East Cape, and, between Tschirimotsch and Dugumur bays as West Cape. The cape is bordered at its south-eastern end by Cape Tombenam. From the mountain village of Akikia in the vicinity of the harbour, Vulcan and the Legoarant Islands can be overlooked. The settlements of Duk and Amutak lie further inland. Dalua Bay takes its name from the village lying on its shore; Daku lies on Bonin Bay; and on Bilau Bay we have the villages of Nambar, Bilau, und Eidibal. Five small streams: Abuhi, Matowotan, Dagaputa, Nanidsinwag, Woragagg, open into Dagumur Bay. Only two settlements lie on Tschirimotsch Bay: [121] Garbitsch and Kilibott, and the small Daigun River flows into the sea. In Tombenam Bay to the south we find, finally, at the mouth of the Toto, the large village of the same name; the settlements of Kaitu, Mbudsip (Mutschi), Kalelat, and Tsimbin; and also Tschiriar, Munumunadak, Beiadat, and Kawoven. The area is drained by the Dodo, Bub, Sudur, and Kaletsag streams, which are navigable by boats; on the other hand, the Bolabab, Adsumambar, and Bair-Ag are afforded only the designation of streams. About one German mile from the former German station at Hatzfeldthafen, and between the villages of Kaitu and Mudschi, the Margarethen (Kaukombar) River is fifty metres wide where it flows into the sea. The river bottom is part sand, part scree. The river has a steep drop, with no deep gullies. The hinterland of Hatzfeldthafen is a hilly area with gently sloping hillsides. The actual harbour, at 145°9' E., 4°24' S., lies in an inlet between two headlands, named East- and West Capes, on both sides of the small island of Tschirimotsch, and is protected from the sea by coral reefs. An isolated reef divides it into an eastern and western half. The entrance west of Sechstroh Island (Patakai) is recommended for bigger ships. East of Samoa Point to Cape Gourdon is the best and most densely populated coastal stretch of Kaiser-Wilhelmsland, according to Finsch. The next bay, Franklin Bay, has gained notoriety due to the murder of the missionaries Scheidt and Bösch (of the Rhenish Mission). The bay is bordered by wooded hills that extend as far as Dove Point. The area further south, around Kronprinzenhafen and Prinz Eitel Friedrich Hafen — both harbours are surrounded by mountains, and safe — and further beyond Neptune Point, is well populated. Two small rivers open north and south of the next promontory, Puttkamer Point. From Dove Point, next in a south-easterly direction, up to Pallas Point, the coast is occupied by casuarinas, a poor and relatively-unpopulated stretch of land.

At the level of Dampier Island or Krakar (this is the correct spelling, not "Karkar" as it is usually incorrectly written; it thus corresponds also with the Siar *Ksa-Kas*), whose volcano, long believed extinct, appears recently to have resumed [122] its activity, is Prinz Adalbert Hafen at about 4°48'S., a bay that is divided into two parts by a rocky reef. A small river opens into each part. Dampier Island, with a diameter of forty kilometres, is a densely-forested cone around fifteen hundred metres high, with few coves and without a single useful harbour or anchorage.

The ensuing land is flat, or gently-rising hills, behind which the mountains rise, only about fifteen kilometres away. Thus, here again we have a stretch of coastline that would probably be suitable for plantations, especially since a number of small coastal rivers: Ama, Kau, Sabak, and Gabaron, open there. Admittedly, the Ama has a bar at its mouth but it is navigable beyond that. Five kilometres from the village of Bagili it receives a small tributary that drains the rich hinterland between its mouth and Cape Croisilles. The countryside south of Tumuraran is divided into two parts by the main river: while the area south of the Ama River as far as the Gabaron River forms a terrain full of stagnant water criss-crossed by little streams and making access to the interior difficult, the northern part is a beautifully hilly and flat land, occupied in part by the gardens and settlements of the natives, it still offers sufficient space for European settlements. In the landscape of Bunu Erembi, and Sempi north of the Ama River, the native settlements are

virtually all a certain distance from the coast, only the two principal villages of Matukar and Tumumaran lie directly by the sea.

About one hundred and fifty metres from Cape Croisilles Hollrung, during his 1887 expedition, discovered a pond, Dimirr, one kilometre long; it is an elongated oval, with a width of one hundred and twenty metres, extending from south-west to north-east. Its inflow is the Susuol, and at the southern end it discharges through a short connection into the ocean.

The land south of the Gabaron, which is navigable for small boats and probably also small barges, has a coral base roughly as far as Juno Point. However, due to the incising bay to the south, it acquires Grand Duke Alexishafen, which was recorded in 1883 by officers of the Russian corvette *Skobeleff*. The natives call the land around the harbour Budup. Further inland lie the [123] villages of Kekar and Wollembik; coming from the north and emptying into the harbour is the small Ju River. Six kilometres from the mouth its width is about ten metres, its depth 1½ m. From Cape Juno to Cape Kusserow we have a flat, planar, richly-forested, coastal country whose termination is formed by a relatively-high chain of hills in the background.

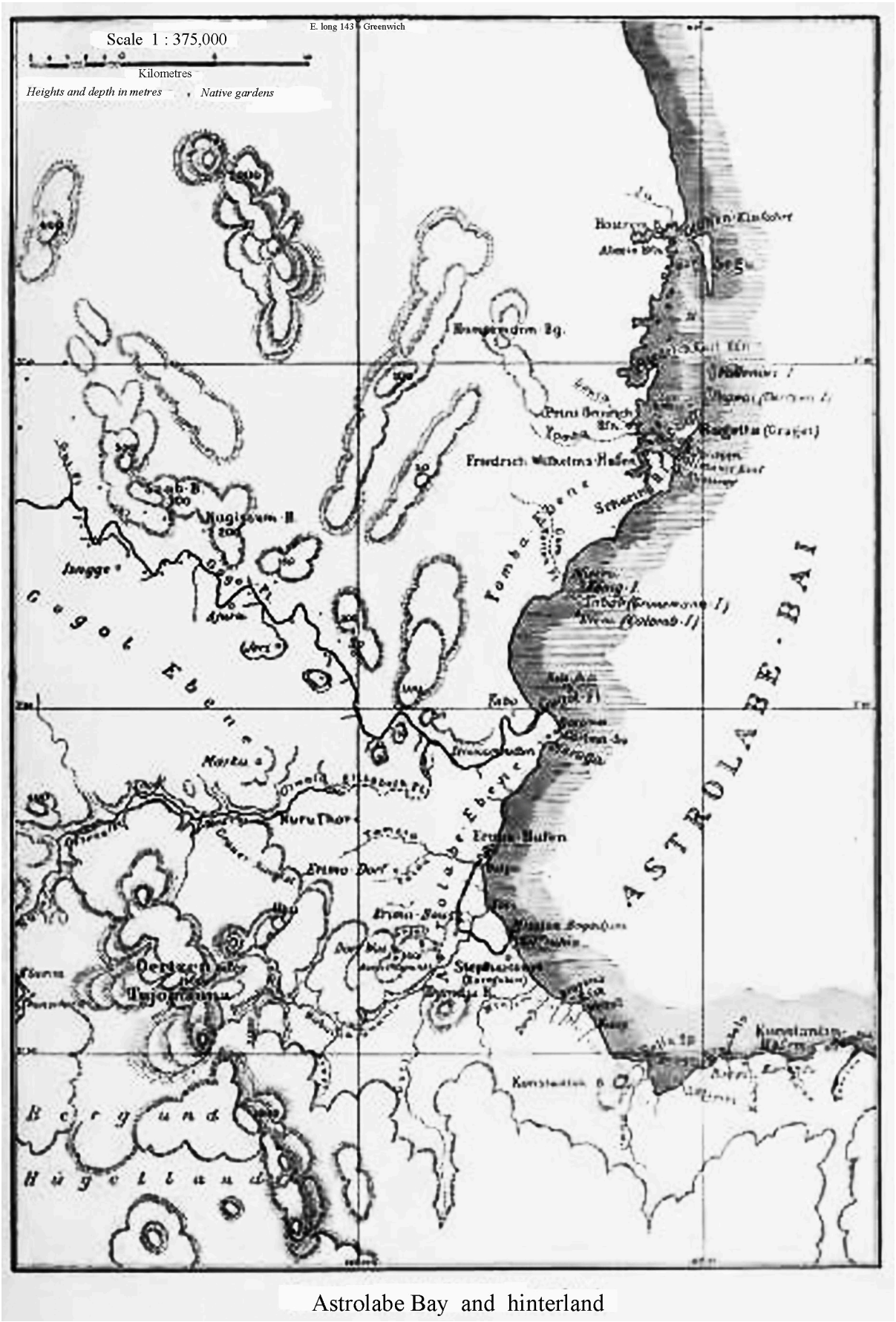
Stretching from Grand Duke Alexishafen to the island of Bilibili is the "Archipelago of the Contented People" about 20–30 small islands, including the largest, Segu. Other significant islands are Graget (Ragetta), Siar and Beliao. Siar, like the island of Bilibili about twelve kilometres further south, occupies a dominant position in this area.

Several worthwhile bays follow sequentially southwards from Segu: Friedrich Karl-Hafen, Prinz Heinrich-Hafen into which flows the Gauta River, and finally, probably the best harbour of them all in Kaiser-Wilhelmsland, Friedrich Wilhelmshafen. This excellent harbour, suitable for the largest ocean-going ships because of its depth and space, was discovered on 19 November 1884, and was named after the Crown Prince Friedrich Wilhelm, later Kaiser Friedrich. Friedrich Karl-Hafen has not yet been sufficiently investigated; however, Friedrich Wilhelmshafen and Prinz Heinrich-Hafen have been surveyed in detail by S.M.S. *Elisabeth*. Inland, the already-mentioned Hansemann Mountains run south-east to north-west. It is totally wooded and fairly heavily populated. The insignificant Jomba River flows into inner Friedrich Wilhelmshafen. It is navigable to canoes only in its lower reaches, since six kilometres from the mouth, just behind the Jomba garden it is only a small stream. The beach here consists of raised coral limestone; probably the Hansemann Mountains behind do too.

On Graget (Ragetta) we find a beautiful, parklike setting and an elongated lake that has has an outflow to the sea. North of Ragetta lie the Örtzen and Follenius Islands. Both the small Koch and Götz Islands, offshore from Prinz Heinrich-Hafen, are now uninhabited. Ruo (Wonad) lies somewhat north. The island of Siar, in the northern part of Prinz Heinrich-Hafen, is heavily populated on the western side; the inhabitants' gardens are on the mainland. [124]

Small, Cutter Island lies in outer Friedrich-Wilhelmshafen; it is the location of the Native Hospital for the Friedrich-Wilhelmshafen station which, situated on the Schering Peninsula, had been the seat of the central administration of the protectorate of the New Guinea Company. The entrance to Friedrich-Wilhelmshafen west of Follenius and Örtzen Islands is not feasible, because of the many reefs. It is accessible from south-south-west, between Ragetta Island and the Schering Peninsula, through the Dallmann entrance. Ships usually moor in the very spacious outer harbour, between Cutter Island, Beliao, and the mainland; but the inner harbour is also deep and capacious enough to accommodate the largest vessels. Warships anchor usually outside the harbour, west of Ragetta, probably for fear of malaria.

Setting a course southward to the island of Bilibili, one soon passes the three small Jomba (Jombombo) Islands, opposite the mouth of the Gum (Marien) River, and only several hundred metres from the mainland. They bear the names König, Gronemann, and Colomb islands. Between the most-westerly König Island and the mainland there is good anchorage with nine fathoms depth. Gronemann Island is a small, wooded coral island, and uninhabited. König Island, on the other



Astrolabe Bay and hinterland

hand, with several coconut trees and a lively population, and Columb Island too, are inhabited. About five nautical miles south lies the island of Bilibili, approximately one kilometre long. With its flat, sandy beaches to the west, its mighty, tall trees, and large, stately houses, makes a pleasing impression on each visiting stranger. There is no anchorage off the island, adorned by only a few coconut palms. In the southeast of the island a coral mound rises about twenty metres high.

Beginning at Cape Kusserow and extending right to Cape Rigny, is Astrolabe Bay, which was discovered by Dumont d'Urville in the French corvette *Astrolabe*. Unfortunately the bay does not have a single large harbour or a safe anchorage. Then Konstatinhafen offers space for only a few vessels and is unsuitable for anchoring also because of its great depth, and the plumbed landing site at Erima Harbour, protected by offshore reefs, is certainly not suitable for bigger ships. Here as in the whole [125] Astrolabe Bay, the swell is so high, especially during the southwest monsoon, that a landing is virtually impossible. The seabed drops away steeply from the shore, to an average depth of two hundred metres. At Konstantinhafen raised coral limestone takes over from sandy beach. The already-mentioned Gum River has a width of 60–90 m. and a depth of 1.5–2.5 m. Yet even by one nautical mile upstream its depth diminishes to 0.9 m., and it later takes on the character of a mountain stream. In the direction 40° S. of the southwest side of the island of Bilibili, and three to four kilometres north of the village of Gorima, flows the Gogol, well-suited for penetration into the interior. It comes from a northwesterly direction and, with an average width of fifty metres and a depth of one to two metres, by and large it does not have the character of a mountain river, but it is the most important of the rivers that flow into Astrolabe Bay. It brings down many small pebbles from the mountains, usually including red jasper and shale.

Waterfall on the Elisabeth River

The coastline from the Gogol to the Jori River belongs to the Gorima people. Their landing place is at the village of Maraga. In its lower reaches the Jori is about twenty to thirty metres wide and not quite one metre deep; in the rainy season the riverbed expands to more than one hundred

metres wide. On the right side the river receives the Guangji, and on the left side the Nobúlji. Several small streams flow into the sea between Maraga and Erima (the plantation station of the New Guinea Company, cf. Plate 19). Seen from a distance, the land looks very inviting, but beyond the sandy beach extends an almost impenetrable swampy beach forest through which the natives laboriously make their way over fallen tree trunks. They have created their gardens further inland, in the densest virgin forest. The Gorima flat is only sparsely populated. On its right side the Gogol receives the Elisabeth River, whose course was followed for a distance by the Kaiser-Wilhelmsland Expedition in 1896 during their advance up the Ramu-Ottilien River.

Lauterbach records the width of the river, which the natives call Naruha or Nuru, as fifty to one hundred metres. It arises at an altitude of six hundred metres on the Sziganu massif and is virtually a mountain stream over its whole sixty kilometres from southwest to northeast.

Following the Gorima region which, as already mentioned, extends south as far as the Jori (or Joria or Jur) is the territory [126] of the Bogadji people. The Jori flows into the sea in three arms. The actual Jori forms the northern arm, the Buram the middle arm, and the Zibir the southern arm. Two rivulets, Labuga and Kakar open south of Zibir; two others, Kay and Manja, cut through a once-forested, swampy land. South of Kakar the land rises about eight metres above sea level. The site on which the Stephansort station of the New Guinea Company now stands is called Karegulan by the natives. The Minjin forms the southern border of the Bogadji lands; beyond it, the Male lands begin. The stretch of land towards the coast is a wooded swamp; inland it is hilly, and suitable for growing coffee. Between the villages of Minjin and Bogadji there are many small plantings. The Minjin, which is two hundred metres wide at its mouth, was explored for a distance of about forty-two miles by Captain Webster in 1894, to an altitude of 1600 metres, which is its source according to Captain Webster. In the lower reaches there are several villages; it has a very steep gradient in its upper reaches. Not far from the source of the Minjin is the watershed between it and the Ramu; and so the Minjin can serve as the most convenient access from the coast to the Ramu Plain. Besides the Minjin, two small streams, the Doub and the Drayena, flow into the sea in the Male lands. The Kisk River (Kior) forms the border [127] of the Koliku region: a hilly, and, at Belim Point, a soaring coral landscape. Beyond Belim is a small bay into which flow several small streams: Marjenga, Jombaha, Yen, and Tolimbi. The latter is, again, a boundary between Koliku and Bongu, and the latter's border with the Korrendu people is formed by the Kukur stream. The Korrendu–Bongu landscape makes a beautiful, park-like impression: both are prosperous villages with well-maintained houses.

The mountains west of Melamu, which come right down to the shore, terminate in the six-hundred-metre Konstantin Mountains. Konstantinhafen, at 145° 45' E., 5° 30' S., where Finsch raised the German flag for the first time on New Guinea soil on 17 October 1884, is, as mentioned, a narrow basin, and unsuitable for anchoring because of its great depth. In its immediate vicinity there has been a station of the New Guinea Company since 1886. On the western shore of the broad Astrolabe Bay, in addition to the rivers already mentioned, the Wein flows into the sea, and on the south side, the Kajagi, Uwag, Tolumbu, Jelegde, Sobola, Gurur, Tjenioku, Golangsamba, Charendele, und Marau. From there, as far as Kabenau (Gabina River), is the territory of the Gumbu people. East of the Kabenau flows the Bok, with a slight fall, narrow estuary and no bar. While the Kabenau has such a steep drop that it is impassable by boat, the Bok is navigable by boats and small barges. East of the Bok are several smaller water courses: the Kolle, Maku, Kabarau, and several smaller streams.

The series of islands offshore between the mainland's Cape Croiselles and Cape King William, form a chain of volcanoes that are today virtually all extinct, starting at Dampier and ending at Tupinier Island. About five nautical miles from Dampier Island, in a southeasterly direction, is the island of Bagabag or Wagwag (Rich Island): a sunken crater with a high, jagged rim on the northern side. On its southeastern side the island forms a deeply-indented bay, offering

a useful harbour, in von Schleinitz' view. Numerous coral reefs are on the northern and eastern sides. The small Crown Island (600 m.) at 5° 8' S., 146° 56' E. in the same direction, and, to the south of it, the much larger Long Island continue the series of islands. The former is a densely-wooded, cone-shaped mountain without any trace of coconut [128] palms. Three soaring cones rise on Long Island: the Réaumur-, Coriz-, and Cerisy peaks (600 m). Since only two peaks are visible when passing the island at great distances, with the northern and western peaks looking very similar at the same time, it has been presumed that the island only ever had two high mountains (von Schleinitz in *Nachrichten über Kaiser Wilhelmsland*, 1889, p.86).

Moreover the island is, for the most part occupied by flat, truncated hills that are covered mostly with scrub. According to the legend of the natives on Astrolabe Bay, Long Island and Rich Island arose in the following way: At the Gileb Stream, near the village of Bogadji two brothers lived peacefully together at first. However later, when they could not agree, they parted, and the younger went into the bush. Here he built a boat, into which he took food and all kinds of animals, one of each sort. Then he went to sea, and when he reached a certain spot he took some sand that he also had in his boat, and sprinkled it into the sea. After he had travelled a bit further, he repeated this; the first time, the sand scattered into the sea became Rich Island, the second time Long Island (Hoffmann, 1848, p.48). Roughly twenty nautical miles east of Long island the 1585 metre volcanic cone of Lottin rises from the sea, with distinct cratering; leading on to the big Umboi (Rook-) Island a distance of ten nautical miles to the southeast. Sixteen smaller islands are offshore to the south, the Siassi Islands, the most important of which are Mulawaja, Tamomga, Arratama, and Tu; while in the northwest is the high, richly-wooded Tupinier Island. The latter appears to be inhabited, because the yellow ornamental shrubs which the natives tend to plant near their settlements are visible from a distance. Hein Island to the west, is a little wooded islet with a beautiful sandy beach. Between Long Island and the mainland passes the thirty-nautical-mile-wide Vitiaz Strait; between Rook Island and into the latter runs the Dampier Strait.

According to the natives of Umboi Island, the latter was at least partially affected by the great sea-wave [129] that wreaked such great havoc on the southwest tip of New Britain, and where von Below and Hunstein, officials working in setting up a station of the New Guinea Company, fell victim. In all likelihood, the immediate cause of this sea-wave was the explosion on Ritter Island of an active volcano, which was said to have shown bumps on its base and sides several days after the disaster (von Schleinitz, *loc.cit.*, p.86). Umboi Island is, for the most part, very mountainous; its south-eastern part has peaks two thousand metres high, including two cone-shaped, extinct volcanoes. Cut into the southern tip is the fully-enclosed, secure Marienhafen, entered between the islet of Galelum and Graat Point. In the northeast, Lutherhafen, once heavily populated, has been abandoned by the natives since the great sea-wave; the survivors retreated into the mountains.

Let us return to the description of the coast of Kaiser-Wilhelmsland.

It projects twice between Novosilsky Point and Cape Rigny. Cape Rigny (Tewalib) itself is thickly-wooded; visible from it are the peaks of the Oertzen Mountains, gradually dropping away to the Jomba plain south of Astrolabe Bay. Following on from Cape Rigny for about fifteen nautical miles southeast, is a gently-rising, slight-undulating land running for thirty nautical miles into the interior. The low shoreline is bordered by a belt of trees or covered in grass. No coral reefs hinder navigation, and so the sea there drops to great depths right at the edge. Extensive *alang-alang* flats are visible when passing by, and so this stretch of land is probably well-suited for livestock, but unfortunately without any major rivers or anchorages. The coast as far as Village Island is called the Maclay Coast, and is apparently sparsely populated up to Herwarth Point. Only beyond there do we find frequent native settlements. Two small watercourses, the Jahoi and the Bringe, flow into Pommern Bay, both with sandy mouths. About seven kilometres south of Iris

Point lies the big village of Massai, with twenty-five huts. Numerous small mountain streams with powerful cascade discharge between Herbert Point and Sareuak Bay.

Eastward, the coastline projects many times, in Kepler Point, Cape Iris, Helmholtz-, [130] Gauss-, and Weber Points, and, south of Sareuak Bay, in Lepsius Point. Beyond this promontory numerous native settlements are again visible on the coast. Between Reiss Point and the small river that empties to the south of it, lies the big village of Singor. The character of the country then become hilly and wooded, and gradually transforms into a rugged land of gorges, until the foothills become wider once more. The countryside round Cape Iris is often grass-covered and appears to have little fertility. In an east-south-easterly direction, immediately beyond Village Island (Teliata) we come across the already-mentioned, remarkable terraced landscape that is immediately striking to every passer-by (see p.15).

On the small island of Chissi in Kelanahafen, the New Guinea Company had a temporary cotton research station. Kelanoa Harbour is a small, but protected inlet seven to eight metres deep and sixty metres wide. On the bay on Village Island lie seven or eight villages, and along the terraced land another four, including the village of Sus on a bare coral reef. The area seems to be well-populated. Five or six kilometres from Village Island an alluvial plain of limited extent has been formed by several small rivers. The coastline then rises quickly to a grassy plateau thirty metres high, with rocky soil. South of the village of Sus the region is called Bole. It is a flat, grassy plain. A small river, thirty metres wide, opens on to the coast; west of it is the Dallmann River, with cool, refreshing water. East of the alluvial plain, the coast projects at Cape König Wilhelm, Hardenberg Point, and Blücher Point. There the mountains approach virtually to the coast and at Fortification Point give it the appearance of a seemingly artificial fortification, alluded to even in the name. Directly beyond Fortification Point is the mouth of the Bupollum River, navigable for boats. The coastline is fringed by dense jungle right on the shoreline. Behind it is a gently-rising series of green-covered hills that would be eminently suited for pasture. South of the Bupollum, the Sankua and Baja flow into Langemak Bay, and, further, the more important Bubui. Langemak Bay offers good anchorage only in its southwestern corner. South of the Bubui mouth there is usually a heavy surf. If you climb laboriously for fifteen minutes up a path from the mouth of the Bubui, [131] you will reach an elongated hill that offers a beautiful view, the village of Simbang, and nearby the eponymous main station of the Neu-Dettelsauer Mission. The Babui comes out of the Rawlinson Mountains; it is fifteen to twenty kilometres long, and receives the Butaueng and Bukuang as tributaries. It is navigable over a good distance for launches, even for somewhat deeper-draught vessels. In April 1887 the New Guinea Company established a cotton plantation on the Butaueng, but soon after leaving the Finschhafen station in September 1891 it had to be abandoned (see Plate 20). The little river forms an imposing waterfall near the abandoned station; it can be easily reached from the mouth of the Bubui in about forty-five minutes by boat. Even today, on the site of the one-time station, between tall grass and wild undergrowth, you can find spicy bananas and juicy pineapples that thrive magnificently there, in the deepest wilderness, and provide an unexpected indulgence to chance wanderers. Even the odd coffee bush still exists, as the last remains of the experimental plantings.

North of the Bubui several small watercourses discharge: the Burui, Buja, Busim and Kaluen; hardly navigable for boats. Before entering Langemak Bay, you will pass the safer, though not very spacious, Finschhafen. It was discovered on 23 November 1884 by Otto Finsch; three days later the German war flag was raised on shore there; and two years later, on the Salankana site south of the village of Suam (cf. Plate 19) the first Governor of New Guinea established his Residence.

Finschhafen consists of an outer harbour and three compartments separated by narrowing of the fairway. The southernmost section is accessible only to barges and boats, because the

channel leading into it from the middle harbour is not even one metre wide. The other two compartments can be used also by bigger ships.

On the extended tip of the Sattelberg, which is probably worth development, the Neu-Dettelsauer-Simbang missionaries established a branch station, which is sometimes sought out as a health station by Europeans. A third missionary station is on the Tami Islands of Kalal and Wonnam below 6° 45’ S. Overall, the Tami Islands consist of a group [132] of four, in part flat, in part high coral limestone islands, and two small rocks.

The next bay south of Finschhafen forms Dregerhafen. It is much more spacious than Finschhafen, perhaps 1½ times as big, and is formed on the western side by the mainland, on the eastern side by the island of Mattura, and on the southern side by the Gingala Islands, Kumban, and Mussing. For bigger ships it is accessible only from the south, through a three hundred and fifty metre wide entrance protected from swells by nearby reefs. Anchor depth is twelve to fifteen fathoms. The Bubarun stream flows into the harbour. Running parallel with the coast is a mountain range that forms a fairly-extensive plateau. Southwest of the Bubarun, the Bugain River flows into the sea; it is about ten metres wide at the mouth. A bar and offshore scree prevents entry. Schneiderhafen is created by the Dreger Islands; it has only a narrow entrance, five to six metres wide and three fathoms deep.

The two harbours just described belong in Huon Gulf, the deep coastal bay stretching from Cape Cretin in the north to Mitre Rock in the south. Von Schleinitz, Finsch, and Corvette Captain Rüdiger (1897, p.280 *et seq.*) have rendered outstanding service towards its study in recent times. The gulf is characterized by a large number of bays, not all of equally-good quality. The coastline as far as the Luard Islands is formed by and large from a densely-forested hill and mountain range rising from the sea. There are somewhat-swampy, wooded foothills here and there. From Hänisch Harbour to Cape Arkona the foothills of the Rawlinson Range approach closely to the beach.

Hänisch Harbour is too deep for anchorage. A heavy swell predominates along this entire stretch of coast. A small stream opens south-west of Cape Gerhard, which forms the southern tip of the bay. Before Cape Arkona the coast projects at two locations: Cape Königsstuhl and Cape Stubbenkammer. About eight to nine nautical miles west of Cape Arkona, during a recruiting tour by two officials of the New Guinea Company in March 1890, a large river was discovered; it was called Busso by the natives and had not been recorded on maps up to that point. [133] Somewhat further west, at 6° 47’ S., the Adler River flows out, but again, unfortunately, a bar forms at the mouth. Since the water depth sixty metres off the bar is ten to thirteen fathoms, anchoring is possible in the vicinity of the river. In Rudiger’s opinion (*loc. cit.*, p.282). The Adler River is only a second arm of the Markham River, which opens about five kilometres further south. According to Captain Dreger the stretch of river explored so far lacks the indicators of a bigger river. It flows into the Preussen roadstead, which is protected by the flat formed by this river, navigable for small vessels. Unfortunately the Markham shallows to about three fathoms at the mouth and is accessible only by boat. In its further course it forms several large islands, and at a depth of about two metres its width is three hundred to five hundred metres. The area round the river is well-populated. At any rate, the riverbed blazes a trail into the interior for the explorers. The report of the Kaiser Wilhelmsland Expedition makes it appear very doubtful whether the Markham leads very far into the interior, since, as was pointed out at the time of the Expedition, the Ramu-Ottilien River is a larger watercourse than was suggested at the beginning. Without doubt, the Markham has its origin in the Rawlinson Mountains and the southern foothills of the Bismarck Range. South of the river, among the foothills of the Herzog Mountaims is a low, alluvial landscape, with great lagoons: the Herzog Lakes, entered by a two-kilometre-long channel. In the lagoons are numerous small islands, for the most part inhabited by a very shy, suspicious population. In this marshy landscape the mangrove reigns; rarely does one see coconut palms.

High, wooded mountain ranges, three hundred to seven hundred metres high, form the coastline from the Markham River to Parsee Point. Once past Steinmetz Point, you then pass a few small settlements in coming to the Kella coastline, that does not commence until ten nautical miles south of Parsee Point. There are eight small settlements on Parsee Point with two mountain villages further inland. The whole area, and further south too, is well populated. Samoahafen is formed from the Parsee Peninsula, [134] and very constricted by several reefs. The inner angle of the harbour provides good anchorage for larger ships and is protected from the open sea. The depth is three fathoms at up to ¾ cable length [137 m] from shore on the south side; and 1½ – 3 cable lengths [274–549 m] on the other sides. The coastal land is mostly flat, but partly hilly; half in forest and half covered in grass.

The Francisca River, the starting-point of Ehlers' unfortunate 1895 expedition, flows into Bayern Bay extending south of this cape. The great depth of Bayern Bay makes it difficult to anchor there. Unfortunately, the Francisca River too has a silted-up mouth, one hundred and fifty metres wide, narrowing to fifty metres upstream, its tearing current flowing over a bed of quartz and granite pieces between steep mountain walls. Due to the shallowness at the mouth, and the slightly-fluctuating depths upstream, the river is navigable only to boats (portable at best). The riverbed is of considerable width and its banks are of scenic beauty. At the mouth lies a small village which, like the settlement further inland on a ridge thirty metres high, received the Ehlers' expedition in a friendly manner and hosted them. As for the soil composition of the interior, Ehlers, murdered in such a sneaky manner by his companions, could have given the best information; according to the statement of his black companions, the land up to the Heath River is impenetrable jungle of a mountainous character and drained by three rivers (probably the tributary of the Markham: (Lauterbach, 1898, p.164)) but scarcely enlivened by people, even less by animals, and impassable.

Approximately ten nautical miles south of Parsee Point you pass the pretty, small, wooded Dot Islands. The land on the coast then resumes the character of a vast flat, up to Einsame-Insel. Beautiful settlements lie there on the coast, and differ to their advantage from the wretched settlements that are encountered further southward as far as the British border. Running almost parallel with the coast in three 1000–1200 m high ridges is the Cooper Range, with apparently very steep slopes; the above descriptions of impassability and abandonment of the area thus bear great likelihood [135] of their veracity. South of Einsame-Insel, where there is a native village under the coconut palms, a river about ten metres wide opens immediately beyond the coast projection of Gossler Point, and at the southern end of the subsequent Nassau Bay: the Nassau River, approximately eighty metres wide at its mouth. There, however, it is only ½ m. deep; further upstream its depth is up to 2½ m., then to become shallow once more. Unfortunately it has a bar at the mouth.

From there as far as Adolfhafen the coastline consists of an uninterrupted, continuous series of wide, open bays, which are adequately protected by the offshore Damplings-, Longuerne-, Cape Verdy-, Fly-, Straggling-, Bee, Layard and Luard Islands. Following Nassau Bay, from north to south are: Sachsen-, Hessen-, Baden-, Württemberg- and Braunschweig Bays. The promontories along the coast are called: south of Nassau Bay, Cape Moltke; south of Sachsen Bay, Cape Roon; south of Hessen Bay, Cape Wrangel; north and south of Baden Bay, Capes Bronsart and Goeben; south of Württemberg Bay, Cape Verdy; and north and south of Braunschweig Bay, Capes Blumenthal and Werder. Finally, the last promontories of Kaiser-Wilhelmsland are Cape Falkenstein and Cape Longuerne, the latter forming the northern tip of Deaf Adder Bay, and as the very last, before Mitre Rock, Alligator Point.

Stone River discharges into Hessen Bay; north of Adolfhafen are two smaller rivers; and south of it the Hercules River. The Stone River, said to be two hundred metres wide at its mouth and 1½ fathoms deep has, unfortunately, a raging current and becomes shallow half a nautical mile

from the coast. It is therefore unnavigable, and its bed simply permits penetration of the interior on foot.

The offshore Dampling- and Longuerne Islands are rocky, coral islands, and may be regarded as a continuation of the mainland mountains.

Otto Finsch encountered a remarkable phenomenon in Adolfhafen, which he discovered on 18 November 1884. Finsch had, in fact, miraculously found fresh water in this harbour; but he admits that this phenomenon could only be a periodic event. Corvette-Captain Rüdiger, who investigated this phenomenon during his visit to the Huon Gulf in the spring of 1896, [136] explained Finsch's observation simply: "that after heavy rain during the night, the harbour water could be covered by a more or less thick layer of fresh water that would remain for hours on top of the seawater in calm weather." Moreover, the harbour, as Rüdiger also points out, receives the discharge only of an insignificant little river whose water, as he himself tested, tasted only slightly different from seawater, at its mouth.

In the inner, southern bay, the harbour is connected with a series of lagoons further back, the Martha Lakes, by a strait about 1½ nautical miles wide. The lakes were discovered by Corvette-Captain Rüdiger in spring 1896. At the discovery the entrance was thought initially to be a major river, because of the raging force at the breach; however, the massive outflow of the water is merely a phenomenon of the ebb and flow, according to Rüdiger. The Martha Lakes form an inland water area, five nautical miles long and four nautical miles wide, with several small islands. The coast is enclosed by mangrove trees. Natives are not settled there; the presence of isolated fishing huts shows only that natives of neighbouring villages go to and from the lagoons, probably to fish. On the other hand, the north side of Adolfhafen is populated. A little further north of this harbour, and separated from it by a swampy strip of land a hundred metres wide, is the outflow of the Rüdiger River. It has considerable width and depth at its mouth, and is navigable for boats. About two hours upstream there is a large native village on the left bank of the river. The plain formed by the river as estimated as covering six thousand hectares (Rüdiger, *loc. cit.*, p.293). Further inland is the three-hundred-and-fifty-metre-high Mount Ottilien.

From Adolfhafen southward, the coastal region shows a very different geography than previously; it is initially bounded by a densely-wooded series of hills; later, up to the British border, these are replace by densely-wooded flats. Only one noteworthy river flows in the entire stretch: the Hercules River at 7°45'S, the last one in German territory. It forms a flat at its mouth, it is about seven metres wide, and is navigable for boats. South of it begins a region that, to all appearances, contains gold fields. The Anglo-German border is formed [137] by the Mitre Rock, a twelve to eighteen metres high conical mass of rock whose top is covered in grass and scrub. The rock catches the eye of every passer-by; a reef connects it with the coast. According to recent surveys, however, the German border should lie a little further north, because after a more precise determination of latitude made during the survey by S.M.S. *Möwe* in the autumn of 1895, which corresponded with the observations of MacGregor, the Governor of British New Guinea, the eighth parallel, which formed the border, did not intersect the coast at Mitre Rock, its intersection was at one nautical mile south of the mouth of the Ikore River, so that the mouth of the Clyde was actually in British territory (*Nachrichten über Kaiser Wilhelmsland*, 1896, p.51).

2. The Population

a. Skin shade and body form, Appearance, Clothing and decoration

The Papuans form the population. The name *Papuan* has not yet found any satisfactory explanation. I.C.F. Riedel places it in conjunction with *hahua* or *fafua*, the fungus of *Arenga saccharifera*, which is said to have great similarity with the hair of Papuan children: as Riedel says, *h* and *f* can be mixed up, and transformed into *p* in the mouths of Malays. Others derive the word *Papua* from the Malay word *pua-pua* woolly- or curly-haired. The natives themselves have no overall term for the land that they inhabit; they call themselves after their place of residence at the time. Are the people autochthonous, or are they immigrants and, if they have immigrated, where have they come from? Furthermore, are they a pure group or mixed-race?

Various scholars and researchers have concerned themselves with these questions. Some writers derive the Papuan race from a large Malayo–Polynesian tribe. In their opinion this tribe, coming out of their original homeland in Asia, settled on the islands of the East Indian Archipelago; but at some time, pressing further eastward, the tribe reached the islands of the Pacific Ocean, where we now find it. This view is untenable. The Papuan has no tribal relatedness either with the Malay or with the Polynesian: while the Malay has straight hair on the head and a hairless [138] body, the Papuan is curly-haired, often adorned with a beard of the same style as the head hair, and is hairy on the arms, legs, and chest in places. The Papuan is usually large; the Malay, on the other hand, is small in stature. In the long face of the Papuan the projecting nose and the prominent superciliary arches stand out clearly. The broad face of the Malay shows a flat nose and flat eyebrow arches. The calm, serious Malay rarely laughs, and is restrained. The Papuan is cheerful and boisterous, brash and pushy.

Even more differences can be seen between the Polynesians and the Papuans; nevertheless, here and there language and appearance, in particular the cranial form of the Papuans, reveal Polynesian elements (Wallace, 1869; Waitz, 1865), but all in too limited an extent to be able to conclude a kinship of the Papuans with the Polynesians.

Octave Sachot (1883) and Haeckel (1885) looked for connections of the Papuans with the African Negroes. They found a remarkable similarity between these two peoples in hairstyle and body shade; the peculiarity of dyeing the hair and piercing of the nasal cartilage; the custom of tattooing; and finally, in language. Haeckel's theory is based primarily on the peculiar similarity of hair growth of the Papuans and the Bushmen or Hottentots. In both, he points out, the hair grows in peculiarly small tufts or villi, which are very short and dense in youth, but later grow to a considerable length and develop into the compact, crimped form. However, Finsch and Miklukho-Maclay, thorough experts on the Papuans, have shown that this peculiarity of hair growth among the Papuans is only a consequence of the treatment of the hair with fat and the like. Also, Dr Bernhard Meyer, who found sufficient time and leisure during his traverse of New Guinea to make detailed observations, has found the same circularly-arranged hairlines with several centres on the shaven scalp of various Papuans as are found in us. He discovered nothing of tufts or villi. Belief in magic, tattooing, dyeing of the hair, and piercing of the nasal cartilage [139] are found also among other uncivilized peoples, as among the African negroes and Papuans; so that connections with African negroes is therefore not sustainable.

On Tiger- or Matty Island, which, because of its proximity is included with New Guinea, traces of a Mongolian race have been found as well.

The fact that the Papuans show similarities with several other races, has led several researchers at least to the view that we have different New Guinea races before us. Romilly (1889) and d'Urville (Waitz, 1865) differentiate three races; the latter the Papuans, then a mixed race of

Melanesians–Malays–Polynesians, and finally the Arafurans, whom he regards as the original inhabitants of the land. Romilly notes that the inhabitants of New Guinea have Polynesian, Malay, and Papuan blood in their veins and among themselves form three totally different races; however, he admits that it is quite impossible to draw any geographical boundaries or to establish where one race ends and another begins. Trotter, d'Albertis, Dumontier, Gill, Seymour, Lesson, and Garnot distinguish only two races in New Guinea. According to Trotter (1884) one is the Papuan race, which, with significant modifications, is represented mainly in western New Guinea, while the other, which, according to him, has definite connections with the Polynesian race, inhabits the south-east of the island. As he further states, both races again show very different variations among themselves. D'Albertis distinguishes an original Papuan race on the east coast, and a Polynesian–Papuan mixed race in western New Guinea. He regards the mixed race as the weaker and more decadent, since their women are dissolute, their men have missed circumcision, and the people go about naked. According to Gill, the brown mixed-race found in the south-east is Malay–Papuan, while he considers the darker people living in the south-west as the original Papuan race. The former differs from the latter mainly in language, the custom of circumcision, and the enjoyment of betel, which is unknown among the actual Papuans. Seymour follows Gill in the [140] main points, but is of the opinion that the pure Papuan race is found only in the interior and the north-west of the island. According to Lesson and Garnot the inhabitants of coastal New Guinea are also a mixed breed of Malays and Papuans, while the plain-haired indigenous people live in the interior and call themselves *Endamener*. Finally, von Baer (Finsch, 1865) distinguishes two types among the curly-haired inhabitants of New Guinea. According to him, the inhabitants of western New Guinea, with a flat skull, receding forehead, and a more-retruding chin belong especially to one group, while to the second: the inhabitants of the southwest coast, the Arfak Range, the north coast, and Torres Strait, with a more domed cranium and a higher forehead. Hopp even establishes precisely the racial border between the original-Papuan and the Malay–Papuan, and designates this as the Manumanu River in British New Guinea, which opens into Redscar Bay. North of it, the Papuan race begins.

All the proponents of that last-mentioned opinion are agreed, that the original inhabitants of New Guinea are Melanesians, i.e. Papuans. Pitcairn claims that they have experienced migrations, and that East Asia has thus been also the cradle of the Papuans. These researchers are looking for reasons for this, and point out the similarity of the Papuans with the inhabitants of the islands of the East Indian archipelago. They introduce as further evidence the ease with which the advance can be accomplished for a population-group encroaching upon New Guinea, during the northwest monsoon period, which prevails for ten months of the year, and the favourable conditions of current flow from the west. Yet Waitz decidedly casts doubt that the Melanesians, coming from the west, have broken through the territory of the Malays, who are far superior to them in every way, but especially as seafarers.

At any rate, we can hold firmly to the fact that, as with flora and fauna, so also with appearance, the manners and customs of the inhabitants of northern Australia and New Guinea today show many similarities and resemblances. In their advance from the west then, the Malays and Polynesians have undoubtedly already found the Papuans as the population of New Guinea; they have blended with them on the coast [141] or even further inland, so far as they found entrance. The Polynesians taught them navigation, and introduced them to the concept of *tabu*, like circumcision. The Malays in turn have shown them pole construction, the art of tattooing, and architecture and ornamentation. From the Malays they adopted the bad habit of chewing betel; from the Polynesians: that of drinking kava.

Apart from the contact and mixing with the immigrants, perhaps poor nutrition here, and climatic influences there, have done their bit in producing the great variations that we find among the people of New Guinea, more so than in any other people. You often see, even deep in the

interior where it is most unlikely that foreign immigrants have reached, side by side in one and the same village, very dark and very pale-skinned inhabitants, straight- and curly-haired inhabitants, people with narrow faces and people with broad faces, beaked noses and flat noses, without finding an immediate explanation for these peculiarities; they form one of the strangest manifestations of the inhabitants of New Guinea. A counterpart to the Papuans' appearance is provided by their linguistic incoherence. Very often the residents of villages only a few kilometres apart cannot communicate with one another! The number of their dialects is legion: according to the expert opinion of von der Gabelentz and other linguists who have studied the idiom of the Papuans in detail, they are, indeed related either to the Malay or to the Polynesian, but yet have far more relatedness among themselves, and often merge imperceptibly into one another. And, as Waitz correctly points out, the Papuan dialects that are not known in more detail reveal so many traces of similarity among one another that, without any other knowledge of the people who speak them, we must, perforce, come to the conclusion that these people belong to one another or, better, belong to a single group.

The natives of Kaiser-Wilhelmsland are, by and large, to all external appearances of good stature, medium build, slim and, as a rule, less muscular and strong than the Europeans, and with rich, dark, curly hair. Like everywhere else in New Guinea, intermingling and variations in nutrition and activities [142] have caused deviations from the norm. As already pointed out, there are echoes of the Malay-type on Gressien-, Bertrand-, and the neighbouring islands, also in the Bunu countryside, particularly the village of Matukar, and on the Ama River. The natives of Matty Island (discovered in 1892 by Ludwig Kärnbach, deceased 1897), are reminiscent, in outward appearance, of the Mongolian race and are presumably offspring of the Chinese dispersed there a long time previously, who intermingled with the Papuan people encountered there. Furthermore, among the natives of the Sattelberg we find certain similarities with the Australian aborigines. Again, the Yabim in the area around Finschhafen, like the Papuans of the upper Augusta River and on Hatzfeldthafen show a prominent Semitic type, while the natives of Astrolabe Bay are more reminiscent of the Caucasoid type.

The skin shade varies from deepest dark brown to palest light brown; sometimes there are totally-unexpected variations, and albinos appear here and there. Very dark skin coloration is shown by the natives on Angriffshafen, on the Augusta River in Hansa Bay, in the area of Hatzfeldthafen, Finschhafen and on Dampier. The Papuans at Krauel Bay, in the Bunu countryside, on the Huon Gulf, the Salengs, and the people south of Parsee Point are more dark than pale. North of Parsee Point the population is a light-red to dark-brown shade and, strangely, as throughout the Huon Gulf, shows a total absence of eyebrows. Of a somewhat paler shade are the people on Berlin-, Dallmann-, and Grand Duke Alexishafen, as in the Archipelago of Contented People and on Astrolabe Bay. The lightest skin shade in German New Guinea, paler than that of the Malays, is owned by the Matty Islanders. The men there are about medium build, sturdily built, while the women are smaller and more delicate. Both sexes deviate totally from the Papuan Type in another aspect. The eyes are slit; the nose is not as broad as elsewhere among the natives of German New Guinea; the hair is straight and worn by the men in corkscrew-like strands seventy to eighty centimetres long. The women wear it in a central crest; it is strong and curly in children. (*Nachrichten über Kaiser Wilhelmsland* 1897:58). [143]

Moreover, the populations of the small neighbouring islands do not differ very much from those of the main island, generally no more than the coastal-dwellers from the mountain people; although the mountain people of Kaiser-Wilhelmsland have stronger leg muscles and a more-powerfully developed lower body than the coastal population, whose arms and upper body, in contrast, are more developed through the movements of paddling. Furthermore, in rich copra and sago areas, the well-fed Papuans unquestionably have a better appearance than the population that

lives in regions where the soil is occupied by casuarinas and broad areas are overgrown with *alang-alang*.

A precise value cannot be given for the average body size: very big people are found in the village of Zenap on the upper Augusta River; the Yabim and the people of the Huon Gulf are smaller than the representatives of other tribes. The Namalas on the Huon Gulf are consistently well-built: their beautiful black eyes and sharp, aquiline noses give the face something extraordinarily interesting and engaging. According to tales by the natives, dwarfs exist on the Sattelberg and in the vicinity of Simbang; yet the missionaries stationed there have never come across such figures. The woman is generally more fine-boned than the man, and the latter is, as a rule, bigger than the former. Beards are seldom found, although they do occur, for example among the natives of Dallmann Harbour, on Krauel Bay, in the region between the Augusta and Caprivi Rivers, and in the Archipelago of Contented People. The people on Huon Gulf and in the Finschhafen area show unusually strong growth of beard. However, only older people retain their beards, which by their black colour and form in some individuals allows the Semitic form to emerge even more; younger people shave with shells or broken shards of glass.

It is well known that among all native peoples the males adorn themselves more than the females; among the latter therefore, tattooing, body-painting, and teeth-blackening prevail. In Kaiser-Wilhelmsland tattooing seems to be unknown; on the other hand, painting of the face and chest with black, yellow and red dye is popular, as is the burning of small decorative scars into the skin. The Tagai people north of Berlinhafen for example, paint their [144] chests with grey stripes, and in the Archipelago of Contented People we find painting of the face with red dye that definitely belongs in cast-off waste. Blackening of the teeth is such a laborious and costly process that only the wealthy can do it. Branded scars are frequently found as adornment among the natives in the Archipelago of Contented People, on Hatzfeldthafen, and on the Huon Gulf.

In skin-shade, skull-shape, and stature the Papuans of Kaiser-Wilhelmsland are in general so different from one another, as their dialects are from one another. Without question, the most-developed forms can be found in the river regions: on the Augusta-, Ottilien-, Gogol-, and Elisabeth Rivers and, at not too great a distance from the coast, where the natives, through their simultaneous contact with the mountain- and with the shoreline inhabitants, have the opportunity to train their bodies through both paddling and mountain-climbing. In contrast to others, the Berlin- and Dallmannhafen people, the Yabim, the natives in the Dot Islands neighbourhood, and in the Archipelago of Contented People are deft, mobile, and nimble figures. On the other hand, the people on the Hercules River for example, are ponderous and bumbling: too long a torso, long arms, clumsy hands and feet give them an awkward appearance. In clothing and decoration the Papuans further in the interior of Kaiser-Wilhelmsland are simpler than the coastal-dwellers; the men of the upper Augusta- and Rüdiger Rivers in the north and south of Kaiser-Wilhelmsland go about completely naked (*Nachrichten über Kaiser Wilhelmsland*, 1886:127; and Rüdiger, *loc. cit.*, p.180 *ff.*). On the Sechstroh River a calabash with delicate branded patterns covers the genitals.

The natives further inland on the Ottilien-, Gogol-, and Elisabeth Rivers still live entirely in the Stone Age. The men there usually wear a *tapa* apron; women and boys bast-fibre aprons. Thinness is enhanced among the men by a wide, raffia belt, which compresses the body so much that the pectoral muscles are markedly enhanced. Nose-, ear-, and arm ornaments are rare among the inland populations. Peculiar to the natives of the Gogol- and Elisabeth Rivers is a broad, forehead ornament made of cassowary feathers, and a head ornament of stiff, painted, bast-fibre cloth strips that [145] are secured on the head by a flat, braided ring and hangs down at the back (Lauterbach *loc. cit.* p.161). The natives on the upper Augusta River wear peculiar earrings made from the curved first primary feather of the cassowary; and chest pouches made like a net and interwoven with small seed kernels; and particularly-rich pendants. Furthermore, these natives adorn themselves with plaited armlets, necklaces, and crescent-shaped neck plates.

The coastal tribes of Kaiser-Wilhelmsland show manifold differences in clothing and jewellery. The area between Guap Island and Krauel Bay forms apparently the ethnological border between east and west (Finsch, 1888:316). Here we find not only a transition form in the chest battle-ornament from the western to the eastern style, but also the turtle-shell armbands that are so commonly worn in the east of this area, stop totally in the west. Apparently, draping of the body with pieces of cuscus fur occurs among the coastal tribes only west of Guap Island.

The men's clothing is limited almost everywhere to the tan-coloured, unadorned *tapa* apron. This apron, called *mal* by the tribes of the Archipelago of Contented People, consists of soft, beaten tree bark; it is wrapped several times around the body and then pulled between the legs. This *mal* can have very pretty-coloured patterns, in black, white, or red, particularly on Siar. From the same material, the natives of Finschhafen make both a loincloth and a head-covering: the name for this is *obo*; these are also familiar further southeast, down as far as the Huon Gulf.

The women as a rule have a grass or fibre apron extending down to the knees; only on Matty Island do the women wear a leaf over their genitalia as the sole item of clothing. Of the female population of Kaiser-Wilhelmsland, only little girls up to five years of age go without clothing, as far as we know. The women's aprons are usually lovingly patterned; for example, in the region east of Cape della Torre, dyed black and white, and richly-decorated with shells. These little skirts [146] are prettily becoming: these colourful little aprons are worn in front and behind; several one on top of the other by the young girls on the Archipelago of Contented People: small, but not-unattractive figures, who know how to flirt delightfully, especially on Siar and Bilibili. As for jewellery, the women, as already mentioned, forego very much less than the men: to start off, they usually wear their hair short, and almost never a headdress. Only on Huon Gulf do they have embroidered caps. As ear jewellery women very often use discs of polished dogs' teeth; as necklaces, strings of red seed kernels, shells or braid; as chest ornaments, egg shells, dog- and very rarely boar's teeth; arm rings made from braid, shells, or turtle shell. Often the women wear a big baggy pouch on a carry-band that is secured round the forehead. In it, they carry especially their tobacco, betel nuts, lime, and other requisites.

Almost no value is placed on hair care by the women, but all the more by the men, who wear their wealth of hair in the most varied forms, for display. Usually this takes the form of a shaggy cap. The greatly puffed-up hair wig is usually very carefully prepared, and adorned with flowers and cockatoo-, cassowary-, and seldom hen- and bird of paradise feathers. The natives on Angriffshafen powder their hair with red ochre, while elsewhere in Kaiser-Wilhelmsland this is usually done with lime. A peculiar hair ornament on the island of Gragett (Ragetta) at the entrance of Friedrich-Wilhelmshafen is formed from little bands of finely-split tube, about three centimetres wide, made in open-work, which serve at the same time for holding the hair down, and the *szi*, which serves to secure the comb. The latter is a small rod wrapped in yellow, red, and black-dyed grass braid, and provided with a few small down feathers. Nicely crafted combs can be found on the Huon Gulf. Here, the hairstyle is diverse: some have their hair pulled back and tied in a tuft with a band; others wear it piled high over the forehead and secured with a headband; others again wear it glued together in small clumps or beads. Here the hair combs are four-pronged and made out of bamboo in open-work, sometimes broad and sometimes narrow; a few are very long, and interwoven [147] with red-dyed reeds, sometimes decorated with cassowary-, parrot-, and white rooster feathers. The combs of the Berlinhafen people consist of several rods tied together. Similarly patterned to Samoan hair combs are those of the natives of Angriffshafen; here they are usually decorated with tufts of cuscus fur.

The natives of the village of Talgai, about fifteen nautical miles east of Berlinhafen, let their hair hang down the nape of their neck as a densely-matted mass (about thirty centimetres wide and twenty centimetres long): it is worn similarly by the Guap- and Dampier Islanders, by the people east of Cape della Torre on Potsdamhafen, and on Huon Gulf. In the vicinity of Berlinhafen

little hair-baskets decorated with a wreath of cassowary feathers and bits of cuscus fur are found occasionally. Hair baskets are also popular as a hairstyle among the natives between the Augusta and Caprivi Rivers, on Krauel Bay, and Venus Point. The hair is worn similarly on Dallmannhafen, there the densely-matted plait attachment is wrapped round with ribbons of pandanus leaf. At Dallmannhafen, tubes of pandanus leaves can be found as a headdress, fastened into the felted hair with a bird-bone needle. On Angriffshafen the natives wear headdresses of hoops of black braid in the village of Massilia, twenty-eight nautical miles east of Angriffshafen; headbands of shorn cassowary feathers, which are fastened on to braid, like a brush; also many bindings made from a wide piece of cuscus fur (dyed black and dark red). A peculiar, conical hat, in mat-plaiting, serves as headwear for the Finschhafen people; other characteristic headwear in the Finschhafen area, are round, high cylinders of tree bark, and hats braided out of human hair over a wooden frame: the latter are called *parung*. We find a similar, turban-like headgear at Parsee Point and the Huon Gulf, after which this promontory got its name from Captain Moresby in memory of the *Parsi*, or fire-worshippers in Bombay, who are known to wear such tall hats.

The material for the forehead decoration of the natives of Kaiser-Wilhelmsland is often provided in the north-east by red *Abrus* beans, for example on Angriffshafen and Venus Point, and also grey seeds and cowry shells that are glued on by a type of wax. From the latter shells and [148] dog's teeth the Rook Islanders make their forehead decoration; on Krauel Bay the headbands are made from braid with an edge trimming of cowry shells and pig's teeth. People wear cords of human hair as headbands, in the area between the Augusta and Caprivi Rivers; and at Parsee Point they wear headbands of yellow braid with four cross-beams of dog's teeth. Ears are adorned with turtle shell earrings on the Archipelago of Contented Peopleand at Parsee Point. Not uncommonly, these are studded with cowry shells, bunches of coucous fur, tassels of feather and seed kernels, for example among the natives in the village of Massilia north-east of Angriffshafen and elsewhere. And finally, some people are satisfied with little pieces of cuscus fur alone, as earrings, or even with dried leaves, for example on the Thorspecken River and south-east of it.

The noblest nasal ornament is boar's tusks; they are worn by the wealthy everywhere in Kaiser-Wilhelmsland. Second to this are wedges of *Tridacna* shell, as favoured for example by the people at Angriffshafen; or the mother-of-pearl with which the natives between the Caprivi and Augusta Rivers adorn their noses. Leaves, cane, or wood are used as nasal ornamentation by the poorer people. Most commonly narrow chains of grass adorn the necks of Papuans in Kaiser-Wilhelmsland as, for example, on Dallman Harbour; or cords of grey or black fruit seeds, as in Massilia; or shellfish, as at Parsee Point. Wealthier people use dog's teeth, cowries, or even boar's tusks. On Astrolabe Bay rope as thick as a finger, worn around the neck, is regarded as the sign of a respected man.

Simple rattan bands frequently form both arm and ankle jewellery among our wards in New Guinea. Arm rings of *Trochus* shell are found in the north, as at the Thorspecken River, and in the south, as at Parsee Point. The people of Angriffshafen [Vanimo] like to wear armbands of seed kernels; and wide turtle shell arm rings, often with engraved patterns and pretty, filigree-work, are found in particularly beautiful shapes on the Archipelago of Contented People, Fortification Point, and Parsee Point. The natives appear to place special emphasis on the pleasing decoration of the chest; even small children are already provided with chest jewellery. For example, boys and girls on Angriffshafen wear narrow bands inset with seed kernels [149] tied together cross-wise over the chest. As a rule, adults here adorn their chests with braid encrusted with cowry shells; on Hansa Bay, and in the area between the Caprivi and Augusta Rivers the chest ornament consists of an oval disc of *Cymbium*, and is decorated with a thin chain delicately woven from grass, as well as with a special type of black fruit seed. Further south, on Dallmannhafen men's chest ornament consist of small, heart-shaped plates of boar's tusks and red *Abrus* beans; in the Archipelago of Contented Peopleand on Astrolabe Bay *Ovula*-, *Cymbium*-, and *Conus* shells, and in the

Finschhafen area dog's teeth, form the principal material for men's chest ornaments. The Bogadjim people on Astrolabe Bay call it *darram* when it is made from *Ovula* shell; *koambim* when it is made out of *Cymbium* shell; and *baum* when it is made out of *Conus* shell.

Finally, the men often wear belts around the waist, consisting generally of bast fibre encrusted with cowry shell; a variant of this on the Thorspecken River is a string of bird bones, and on Ragetta, in the Archipelago of Contented People, dolphin teeth encrust the waistbelt. In conclusion, the men, just like the women, have their plaited carrying bag, similarly inlaid here and there with small shells. The small chest pouches of the men are hung with oval discs of *Cymbium* shell or inlaid with cowry shell, particularly in the north. What is inside the carry-bags of a Papuan? Let us take a look inside! The biggest item we would pull out would probably be a calabash, serving as storage for pulverised lime for use with betel. Next we would find a bamboo knife, bits of cuscus fur, possibly a rattan bowstring, crafted rasp and file as handwork tools, dog's teeth on a cord, betel nuts, tobacco, pepper and tree leaves: the pepper as an accessory of *sirih* and the leaves as a tobacco paper; and finally, in the regions where it occurs, edible soil; yellow earth and charcoal are seldom missing as dye and carbon black material.

A census of the natives has, understandably only been possible on several small islands, so far; otherwise, even an approximate estimate of population figures for the natives is impossible at this time. Zöller estimates the population of [150] Kaiser-Wilhelmsland as 0.68 per km^2 (which would give a population of 127,840 inhabitants); that of the whole of New Guinea: two million.

Generally, the coast is not very heavily populated over the greater part. Native population density is greater than elsewhere on Berlinhafen, Dallmannhafen, Grand Duke Alexishafen, Juno Point, on the Augusta and Ottilien Rivers, and on the islands of the Herzog lakes. The area between the Hercules River and the Mitre Rock is apparently very sparsely populated. Also, in the interior of Friedrich-Wilhelmshafen and in the Hansemann Range the population is sparse; at least as sparse as on the offshore islands. The reason for this is given in a nice story told by the natives of Astrolabe Bay. Rich Island and Long Island were, as already mentioned, created by Mandumba and Kelibob. When this happened, Mandumba opened a box in which there were small, cut-off bits of tendons and veins, which Kelibob, on the advice of his uncle Mandumba, had pulled out of his mother the giantess. The legend goes on to say that as soon as the lid of the box was raised, a great crowd of Tamus, men and women, leapt out; these populated firstly Rich Island and Long Island, and then the others, particularly the island of the Archipelago of Contentment; nobody went to the mainland.

b) Dwellings, Household items, Tools

The dwellings of the natives, are at their most primitive in the southeast. On the coastal stretch from the Hercules River to Mitre Rock they stand on the bare ground, and are so low that they seem to serve more as a residence for animals than people. On Astrolabe Bay and inland from there we can still find dwellings on the bare ground in some places. The houses have an obtuse-angled roof with a straight ridge extending to the ground. A sort of platform is erected in front of the house, with a narrow door leading inside. The usually clean huts are roofed with grass; among the mountain-dwellers of the interior with mats or foliage. Yet there are also quite tasteful pole houses on Astrolabe Bay, particularly in Bogadjim village and further inland. In the village of Wodsa on the Szigaun Plateau at the source of the Elisabeth River, the small, [151] rectangular houses are completely enveloped in a layer of leaves a foot thick, which is artfully plugged in layers between the framework. Their gable roof consists of woven palm leaves and also reaches to the ground. Inside, in contrast to Dutch New Guinea, the houses as a rule have only one larger, fairly dark room filled with musty, bad air. While the natives on the middle Ramu River have quite primitive dwellings, on the lower Ramu we have extended pole houses that are constructed on high

Village of Bogadji, near Stephansort

posts with their roofs protruding over the attached platform like a hood. In this area the jungle fringing the river bank has been felled and the natives have left only the beneficial trees standing.

Thus, everywhere that the people are better housed we find an advanced culture, and, conversely, poor housing henceforth betrays the lack of such. For example, on the recently-discovered Rüdiger River, where, as we have said, the men go about totally naked, the houses are still in quite bad condition and built on the bare ground. Similarly on the upper Augusta River, where the population is poor, and at a lower cultural level, the houses are not as well built as on the middle part of the river, where we are dealing with a more intelligent group. The islands of Bilibili and Siar, and the areas of Pomone Point, Dallmannhafen, and Berlinhafen boast the most beautiful dwellings in the Protectorate, which are reminiscent of the buildings in Kerepunu in British New Guinea, and in Humboldt Bay in Dutch New Guinea. Strong poles carry the frame; the side walls consist of woven mats of coconut palm leaves. A branch leads the way up to the platform, from which the interior is reached; from there a sort of ladder leads to the floor space. Usually the houses are scattered in small groups around the village. Variations can be found in the vicinity of Cape Teliata and the Sattelberg villages of Sellili and Hessimbu. Here the houses on high poles are close together in rows; in the form of an ellipse in Sellili and Hessimbu and surrounded by a fence. There are only a few isolated houses outside the fence. In Gauss Bay, near the Dallmann River lies the village of Rabun, a settlement of twenty solid houses, some individuals being forty to fifty feet long and twenty-four feet wide. They rest on stilts and are twenty feet high up to the gable peak. [152] The roof is covered with grass; the side walls consist of red and black painted leaf discs of the *nipa* or *nibon* palm. Slats made from the wood of the betel palm serve as floorboards; a platform is missing. A staircase leads to a door that slides in a peculiar way.

Tree house near Finschhafen

In Kaiser-Wilhelmsland the rule is that each house gives space only to one family. The situation is different on the middle Augusta River and on Gauss Bay, where the extensive dwellings accommodate several families at the same time; in each case several fireplaces can be found in each house there. In the village of Zenap on the upper Augusta River at about 4°16’ S., 142°10’ E., the houses stand on a very strong foundation and have a tower-like gable peak that soars three to four metres above the roof. We meet such dwellings in the neighbourhood of Finschhafen and particularly on the Huon Gulf, where the side walls of the houses are assembled from canoe planks or boards. These are

provided with carving, although not so elaborately as that on the side panels of individual houses in the village of Boarla near Finschhafen, where figures of people and animals are artistically carved.

We come across a special style of house here and there on Huon Gulf and in the Kei villages north of Finschhafen. High up in the trees, dwellings are built on the truncated leafless crown, in the form of real houses with a platform. At least they have the advantage over others, that they offer the most glorious distant view; they are accessible by means of a rope ladder, which is easily pulled up. European models are already being imitated in building style in Kaiser-Wilhelmsland [153] on the island of Tarawai and more recently on Astrolabe Bay.

In virtually every village, we find in its centre or in another prominent position, a house that is far superior to the others in size and extent: the meeting house. Also, it is not uncommon in the villages to find a simple scaffold, about 1½ m. high, resting on four poles, sometimes as a *tabu* site dedicated to the spirits, and sometimes serving only as a resting or eating place for the men, where they could take their meals unmolested by their four-footed domestic animals or mates. The women have the right only to squat down below.

The household equipment is very primitive. Apart from wooden bowls and cups; pots made of clay; bamboo tubes (for fetching and storing water), we find gourds in the house, woven baskets and mats as a floor covering. As a rule the fireplace is located in the middle of the house: a box filled with sand and a few glowing coals. Here the fireplace not uncommonly serves less for cooking, which is usually done outside the house, but more for maintaining the fire; actually, in many coastal villages they still do not know how to make fire, and so they have to keep feeding the one that is going; if it goes out unexpectedly, then the mountain people, who know how to light a fire, have to help out.

On Astrolabe Bay, most houses have raised benches made of split bamboo along the sides, laid with coconut mats; these serve as beds at night and as a buffet during the daytime. At night they sleep on them, and by day they put pots, bowls, and food on them. In the middle reaches of the Ramu they sleep in sleeping bags that are hung up in the middle of the house. These are woven out of soft pulp, about three metres long and two metres wide: sometimes bigger, sometimes smaller. They are suspended from the pointed end in such a way that the bag for the most part drags on the ground (Lauterbach, 1897). The headrests so common in Dutch New Guinea are found mainly on the Brandenburg coast and at Dallmannhafen in the German region. Here they consist of a piece of wood twenty-nine centimetres long and nine centimetres wide. They are richly-carved at both ends and rest on a foot fifteen centimetres high. The carving depicts men's [154] faces, and tapers at each end into a crocodile's head. The natives' most primitive pillows are simple logs which the Wodsa natives within Astrolabe Bay use when going to sleep, or palm leaf sheaths which are found everywhere in Kaiser-Wilhelmsland as a base for the head.

The wooden bowls found in the houses are often handsomely carved, and bear the images of a lizard, a flying fox, or ordinary zigzag lines. Clay pans are likewise found in most houses, and colossal clay pots as sago containers near Dallmannhafen. In Wodsa on the Elisabeth River the clay pots have very thick walls and are oblong in shape.

Among the stone tools, there is firstly the sago-pounder. This consists of a wooden handle and a twelve-centimetre-long, conical, cleanly-carved stone, sometimes with a revolving wooden inset, as on the Sechstroh River. The main stone tool is the stone axe. It is found almost everywhere in the Protectorate today, yet there are districts where it is already beginning to disappear, particularly on the coast where, with European culture, European needs have begun to find a way in; there is a great desire for iron almost everywhere there, and even small boys appraise branding iron, glass beads, and other trinkets. At Angriffshafen the natives have stone axes with a rotating stone blade; the stone is apparently nephrite and the handle is a straight, round piece of wood into which the wooden holder with the stone blade is bored. On the Caprivi River

the stone is secured to the handle by plaiting; at Angriffshafen the axes are similar to those of Sechstroh River except that the tip of the handle is not flattened but ends in a blunt round knob. The wooden handle is often decorated with carving. On Dallmannhafen, on the island of Guap, and on the Ramu River the axes are not inset transversely, but in the same alignment as the wooden handle; however there are some that are transversely inset. In the area around Finschhafen the stone axes (*kaiki* or *gai*) are made of hard diorite rock and are used just as commonly as tools for building houses and canoes, as for weapons. Also, in the interior from Astrolabe Bay and on the Huon Gulf the stone axe today is the main working tool. On the Huon Gulf and on the Caprivi River the blade is fastened to the handle with rattan.

As for other tools, the Papuans of Kaiser-Wilhelmsland [155] use sieves or filters made from coconut fibre for separating sago flour from the rinsing water. Spoons are usually made from coconut shell; and larger mixing spoons from wood, often decorated with elaborate carving. Knives are made from cassowary bone, human bone, or bamboo; with these, people are able to peel bananas, clean yams, and even cut up meat. They use stone pounders for preparing *tapa*. Rasps are prepared from skate's skin; files out of coral; scrapers from pearl shell; mortars out of wood; and betel nut crushers from kangaroo bone. They substitute a pierced fish bone for our sewing needle.

c. Occupation, Hunting, Fishing

Among the more as primitive tools that the natives of Kaiser-Wilhelmsland have at their disposal, it must be a wonder to us, the level of skill they have attained here and there, particularly in the coastal districts and on the small islands, in the various sorts of activity. For example, the Tami islanders in the south-east of Kaiser-Wilhelmsland perform quite remarkably in several areas. When the Imperial postal steamer *Stettin* approached Mangemak Bay on her eight-weekly voyage, canoes of the Tami Islanders also arrived regularly to offer to trade examples of their art to the passengers from a safe distance, especially charmingly-carved and brightly-painted small models of canoes. They also manufacture finely-crafted, small, turtle-shell earrings from the shell of a small turtle, in a highly-artistic manner. With a homemade drill that they move back and forth between their palms, they bore some holes in a piece of the carapace that has been previously bent in hot water. Then they cut the piece into as many smaller pieces as there are holes drilled in them and, with the aid of a small, glowing log, work them into rings. These are finely polished and indented. They also make turtle-shell arm bands just as skilfully and artistically. Uniformly bending with heating requires a lot of effort and skill. Furthermore, the Ragetta and Siar islanders in the Archipelago of Contented People have attained a high level of craftsmanship in this. [156]

As Tami is the home of carved model boats, the best carved masks are found in the vicinity of Berlinhafen and Dallmannhafen; very-finely-crafted, brightly-painted, winding canoe prows on Bilibili; on Beliao, Siar and Ragetta extremely-elaborately-carved fish figures; and finally, in Maraga on the Maclay coast, beautifully-crafted, round wooden bowls. The fish carved on Ragetta are found in various shapes and sizes: those that are biting into a human head, with a rectangular hole for hanging up; then bigger ones, often 1½ m. long; and also a type of mackerel, brightly painted, and holding a small fish in its mouth. On Siar, such carved fish are attached to long poles in the centre of the village, near the meeting house, and often also on the houses. Still other fish representations are found on Beliao, for example, a species of *Hemiramphus* about two metres long and painted green, and also a species of dolphin as a canoe decoration. The masks in the region of Dallmannhafen are characterized by the sharp, very prominent nose, and the original painting with ochre. They usually also have a tremendously wide mouth and a brightly-painted surface mounting made from bast fibre, similar to the crests on the earlier Bavarian helmets. Sometimes they are also adorned by a beard of human hair. We find similar masks among the Guap islanders, where there

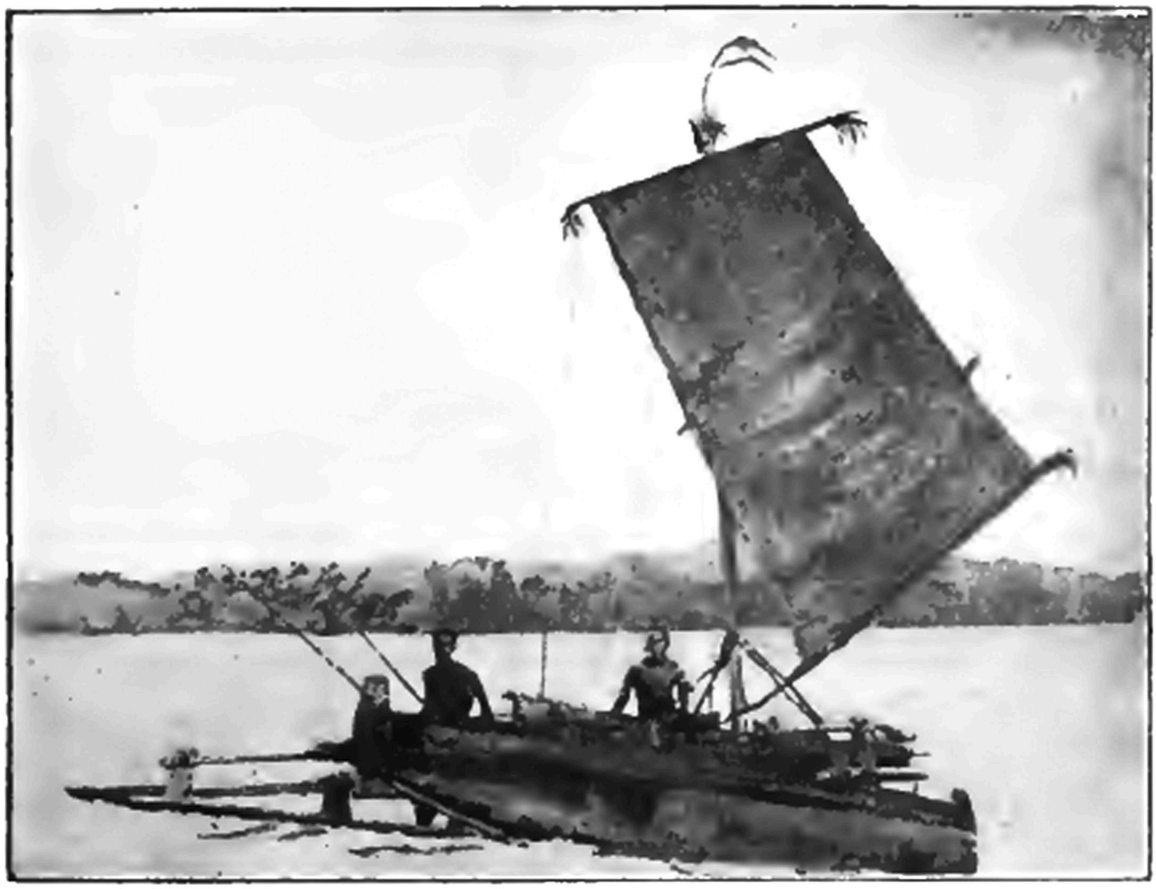
are also roughly-carved wooden figures, and the large, trough-shaped wooden drums are adorned with beautiful carving, representing crocodiles or people. Sometimes the shape of a flying-fox is carved into their wooden bowls. The inhabitants of Tarawai and Valise are masters of artistic carving and indenting work but, due to the introduction of modern tools the golden age [157] of their craftsmanship seems to be over; also, like the Tami islanders earlier, they have recognised the preference of the white people for their carvings and now, unfortunately, instead of the earlier ornate, painstaking, and time-consuming work, they offer superficial, "mass-produced" specimens to the foreigners and, as they see, these are snapped up. In Dallmannhafen as a rule, the prows of the canoes are beautifully carved.


Mask at Finschhafen

The Siar, Bilibili, Tami and Guap people have the greatest reputation as canoe-builders in Kaiser-Wilhelmsland. Good canoes can also be found among the natives of Berlinhafen and Dallmannhafen, and on the Augusta and Ottilien Rivers. On the other hand, Otto Finsch encountered canoes of the most primitive sort on the Albrecht and Sechstroh Rivers. There the natives rowed themselves out to the ship even on tree roots and large coconut palm leaves, using the leaf stalks as oars. And so we see how the coconut tree is everything to the Papuan: it nourishes him and quenches his thirst with its fruit; supplies him with wood for his house and his canoe; covers the roof of his huts with its leaves; clothes him with the bast fibre of its bark; and aids him with the fibre tissue of its leaves as a sieve.

Lined up with the best canoes are those of the natives of the Albrecht River, some of which are ten to thirteen metres long, and provided with side [158] gunwales, a prow-addition fore and aft, an enormous platform structure, and outriggers. On each side of the platform a high, narrow, latticework box is attached; it serves at the same time as a seat (Finsch, 1888:327). However, tree roots are not the only means of transport on the Sechstroh River, there are also big canoes with ornate carvings attached to the platform, usually representing fish in bold colours. At Angriffshafen the canoes are small, and only a few have a mast and sail. The whole canoe is made from a single tree trunk, without a raise gunwale board lashed on. The sides of the S-shaped prow ending in a bird's beak are adorned with carvings of bird and fish figures and painted yellow. There are carvings also on the staves located on the outriggers, used for storing water.

On the Thorspeck River the canoes lack both a platform and a prow addition. The gunwale boards are tied on and brightly painted. Cassowary feathers adorn the masthead. The Berlinhafen canoes are sometimes massive and, like those on the Albrecht River, have a projection on either end that usually tapers out into a figure. On Matty Island they are extremely cleanly crafted; the stern addition is absent. On Guap the vessels are sometimes so narrow that the paddlers cannot put both feet side by side; they are fitted out with outriggers and a platform, but are not set up for sailing. The canoes on Dallmannhafen are beautifully carved; chains of plant fibre and bunches of leaves adorn the mast. In the middle reaches of the Augusta River there are simple canoes with neither outriggers nor surface mountings, which are paddled by men standing up and by women sitting down. On the upper Augusta River the canoes are bigger and can often hold fifteen people; their bows are adorned with big, grotesque, painted shield-shaped attachments. On the lower reaches of the river as well, the natives maintain canoes without outriggers so as to pass between the trees better at high tide. Their boats are also provided with beautiful carvings.



Papuans setting out to catch fish

If you travel up the Ottilien River you will encounter very big vessels six metres long or more, made from very hard wood and cleanly worked. They are built [159] shallow, with a gradually-rising bow and stern. For forward motion, they use lance-shaped paddles with a long handle, which can be used both for stabbing and for paddling. On the upper reaches of the river the canoes are much smaller and simpler, with almost vertically underpinned fore- and aft- sections, and serve more for ferrying and fishing than for more-ambitious war or trading journeys. At Venus Point the vessels are decorated with a strange type of plaster at the top of the mast, with a replica of a frigate bird, and also with fibre ornamentation. The usual carvings are also found here, and usually represent crocodiles; in the lower space mostly human heads in half-relief. In the Archipelago of Contented Peoplethe Bilibili canoes have S-shaped, curved prows on the front section; a nautilus shell is usually attached to the outriggers of the Siar canoes as a decoration. The Bilibili canoes consist of a hollowed-out tree trunk seven to ten metres long. One or two boards have been added to the sides of the vessels, decorated with painting and carving representing fish or turtles. The canoes taper to a point fore and aft; outriggers three to five metres long are attached to right and left sides. Rising on the platform constructed in the middle of the canoe is usually a small hut-like structure for housing the trade-items, the weapons, and the fire container. This last is often nothing more than a simple potsherd that contains the smouldering coals.

The Bilibili canoes often have two masts. The sail is plaited matting; an anchor is substituted by a stone or a heavy wooden stump, whose hacked-off branches form the anchor arms. The rope is made from tree bast fibre; the paddles are usually made of wood, with some very elaborate carving on the base of the blade or on the shaft, that represents the lofty figure of a man,

a bird, a fish, a crocodile or a lizard. As at Venus Point, here too the top of the mast is decorated with a roughly-carved bird, or a nautilus shell painted in red stripes. As canoe decoration the Long Islanders have a sort of triangle made of wood, with bunches of bast fibre and roughly-carved wooden birds; the Bogadjim: wooden carving that represents for example a bird with outstretched wings and a turtle head. Besides Siar and Bilibili, Ragetta, at the entrance to Friedrich-Wilhelmshafen, also offers very handsome canoes with a proud structure and good rigging. [160]

Along the terraced land south of Village Island the natives apparently have no canoes at all, or just very poor canoes. Better vessels are found again only in the area of Finschhafen and Langemak Bay, where the influence of the Tami people is exemplified in this respect. In this regions the canoes are usually two-masted, with big, quadrangular matting sails. On the sides, two to three planks are often added one above the other, and a kind of cage is attached on the first platform for accommodating goods and weapons, as on the Bilibili canoes. The prow and stern are decorated with carving and the sides are painted.

Along the entire coast of the Huon Gulf canoe construction offers nothing remarkable. They are of a very simple style, and are provided with carving only in front, below the prow. On the numerous tiny islands that lie in the Herzog lakes, some of them barely above the high-water mark, the natives, due to space limitations on the small islands, have little space for beaching their canoes. And so they have built wooden cross beams in the water, which are so high that the high tide cannot reach them. At night the boats are mounted on these (Rüdiger, 1897:287). On the Rüdiger River the canoes are so big that they can hold twenty-five to thirty people. Further south, the natives use catamarans. They bind together several logs, four to five metres long, with creeper, forming a raft. To keep the cargo of trade goods dry, they mount a type of seat on the raft. Such a vessel carries only one or two people, but in the southern part of Kaiser-Wilhelmsland it replaces the canoe.

Apart from their carving and canoe-building, the versatile Tami people prefer to occupy themselves with shell polishing and pearl production: a skill practised also by the natives of Berlinhafen and by the Rook Islanders. Pearls very similar to our beads are very often seen in Kaiser-Wilhelmsland strung on pouches, armbands, and chest ornaments. These are from small, conical snails. As soon as they are cast up by the sea they are gathered by the natives of Tami, Rook, and Berlinhafen [161] and their houses polished using every trick in the book (Joest, 1888). Just as the Tami people are masters of shell-polishing, the Berlinhafen people have brought great skill to the manufacture of shell arm rings, which they produce in the following manner (*Nachrichten für Kaiser-Wilhelmsland* 1894:46). First of all they strike off a plate from a *Tridacna* or other suitable shell, which they then impress into a piece of soft wood firmly clamped between their feet. Then a bamboo rod of the same diameter as that of the desired ring is moved back and forth in a circle on the plate, so that eventually a circular section drops out. Finally, the outside of the ring is finely polished. As for other branches of the trades, plaiting and tanning are also carried out by our wards. The Rook Islanders are known far and wide on account of their magnificent plaiting with shell trimming. They use a type of *Nassa* shell for decoration of their weaving. Pretty, flat, elongated carrying baskets made from pandanus and coconut palm leaves and decorated with long tufts of grass are woven at Angriffshafen and Venus Point. The plaiting on the Huon Gulf and at the mouth of the Ottilien River is also of a high level; in both places they make beautiful, attractive bast fibre bags and neatly-woven fishing nets. The Kei people above all are excellent tanners, and makers of the famous *obo*. To produce it they use the white bast-fibre layer of the *kaobo* tree, which adheres directly beneath its bark. The piece of trunk to be processed is initially warmed and charred in a fire; the thin bark is scraped off and the bast fibre layer revealed is split, peeled, and gently softened with the *tapa* beater (Schellong, 1888). Next, the bast-fibre cloth is wrapped over a piece of wood, folded lengthwise and beaten again; finally, it is folded cross-wise and beaten a third time. In this way the cloth is enormously stretched. It is dyed in a peculiar

manner. The dye is provided by a low plant with lanceolate, dark-green leaves, called *gballa*. The natives put a piece of bark in their mouths, chew [162] it and then pull the *obo* several times across their mouth and in this way it is dyed in stripes.

Tanning is carried out only by men; by women here and there: rope-making; and, primarily by the latter, the special women's industry: pottery. One of the main pottery markets is Bilibili, the *χεϱαμααῖχος* of the Archipelago of Contented People, indeed of the whole area from Cape Croisilles to Cape Rigny, however, people are skilled at pottery also on the Sechstroh, Caprivi, Albrecht, Ottilien, Augusta, and Franziska rivers; on Angriffshafen, Berlinhafen, Dallmannhafen and in other places. The tool that the natives use is more than primitive: a flat stone and a wooden mallet is all they use. The clay is simply kneaded by hand, and then shaped on the stone with the aid of the wooden mallet; nevertheless, the pots show a nice regular appearance. Everywhere, the firing is done outdoors. The pots are then lightly covered with wood and exposed to glowing embers for a short time. The Bilibili women do not let their pots go to market without pressing a certain mark into them with their nail: their brand-mark. Only two types of clay vessel are made in Bilibili: a narrow one that serves as a water-container, and a wider one used as a cooking pot. On Dallmannhafen there is a third kind: huge pots as sago containers. In the north, for the most part the village of Tagai on the Albrecht River supplies the market on the coast with pots. This is the seat of a pottery industry extending as far as the region of Prince Adelberthafen. From this point on, is the market of the Bilibili people, who distribute their pottery south as far as Finschhafen.

Of course, the natives prepare all their fishing and hunting equipment themselves. However, fishing and hunting is conducted by the men more as sport than as a means of nutrition. The islanders, and the natives on the coast everywhere, have fish traps, fish hooks, and nets. The fish hooks are usually made from bone or turtle shell, as in the Finschhafen region, and very finely worked. The shank is made from *Tridacna* shell; the cords are occasionally decorated with yellow cockatoo crest feathers or red *Eclectus* feathers. As in the rest of New Guinea they also fish with spears or shoot them with arrows. The bad habit of using dynamite to kill the fish, as [163] unfortunately happens almost everywhere on the coastal sites occupied by Europeans has, fortunately not yet been transferred from the whites to the natives. Of course they themselves do not possess explosives, but also the pursuit of the same is expressly prohibited by regulation. The people have developed a most admirable skill in spearing fish: on the platform of their canoes, on board the European ships, or on steep riverbanks they lie in wait for a long time. When they have spotted a large fish, they dexterously hurl the spear at it; immediately they leap into the sea in the direction of the spear and bring out the fish, exulting. Among a hundred such throws, they might perhaps fail once.

An excellent reputation as fishermen is enjoyed by the natives of Hatzfeldthafen and the inhabitants of Parsee Point in the southeast, who have the most intricately-carved fish hooks.The Siar and Bilibili people also are adept at fishing; the latter in particular manufacture nicely-crafted fish traps. Virtually all the natives on the bigger rivers, such as the Augusta, the Kabenau and the Ottilien, are skilled at this. On the sandbanks of that last river they have large baskets woven out of bamboo to catch crabs or a species of shrimp. Even saltwater fish are caught here and there in the bigger rivers. Crocodiles, whose flesh is highly prized by the natives as a treat, are very common, and yet they very rarely hunt crocodiles. Their hunting is restricted to only a few small mammals and birds. They use their bows and arrows for this; sometimes they catch animals in nets, snares, or pits. Here they develop great patience and, above all, astonishing endurance and quietness. This enables them, for example, to creep up quite easily on the crowned pigeons when they stop on the ground to drink, and to kill them with a sure arrow shot. In order to attract them, they not infrequently set up a stuffed crowned pigeon on the beach, then lie in wait nearby, ready to shoot. If they want to hunt wild boar, they often dig a hole near the pig crossing and lie there for hours in the hunting blind. Usually they kill a passing animal with an arrow, more rarely with a spear.

Sometimes they also encircle large areas of *alang-alang*, then set fire to the grass [164] and, through the fire, drive the game living there into their firing range.

Hunting birds is not economical, because with their primitive weapons the natives cannot reach the feathered folk nesting in the highest tree tops.

They seem to attach no importance to the collecting of insects, birds and the like. For them they are collectibles without interest, and they lack any understanding of it, so that you can use only the most intelligent of them as collectors. It is pointless to try to make them understand that only completely-intact specimens of butterflies, beetles, and other insects have value; it comes to them merely that they get hold of the creature: whether with four or six legs, half or a whole wing, appears to them as quite incidental. And so, as a rule, they substitute a butterfly net with a handful of sand or earth, which they throw at the specimen to be caught.

d. Birth, childhood, family life

A happiness to be cherished, is the Papuan in his unpretentiousness and carelessness. His childhood in particular flows cheerfully, especially that of the Papuan boys. Tenderly loved and pampered by their parents, treated kindly by everyone, seldom hearing a word of abuse, never starving, the Papuan spends the days of his childhood as though in paradise. The first-born is especially cared-for (Vetter, 1897:91). He need not do the least work until his tenth year; it is customary that at the birth the women of the village come together, and the male relatives of the child hunt and chase and finally prepare a feast for them. The feast is repeated, with a dance, as soon as the child reaches ten years old. Should the first born die during childhood, this event is regarded as the fault of the father, who is then committed to giving gifts to the mother's brothers.

The period of the woman's pregnancy prescribes a certain behaviour in many aspects for the husband: the sea is dangerous to him and fishing is not worthwhile, the father renounces betel and tobacco during his wife's pregnancy, [165] so the benefit will come to the child later. If a birth is imminent in the village, the fellow villagers had better stay at home, otherwise the gardens will not thrive. A special diet is prescribed for pregnant women: they are not allowed to eat any heavy or fatty foods, otherwise the child will become monstrous; also, dog flesh should be avoided. Among the Yabim, pregnant women also have to abstain from iguana and octopus as food; tobacco is similarly forbidden. However, if the woman smokes, then in the opinion of the Papuans the child will be stillborn. Deformed children are often strangled immediately after the birth by the women helping the woman in labour, without having to get permission from the father. Infertility is rare. Should a woman remain childless, she buys a little child of her relatives in preference, for a certain remuneration, and raises it as her own. Since the child will be unaware of its relationship with its actual relatives, it often lives together in the same village with its parents and siblings without any awareness. The children are loved, but people prefer to raise no more than three, mainly out of fear of worrying over food or the inconvenience and tedium of child-rearing. They know about abortion, and also the means of preventing pregnancy; twins are rare. When the child is very young, the mother takes it with her to the gardens, usually in a wickerwork that she carries on her back. The umbilical cord is not thrown away until the child begins to walk; only then are they sure that no one will use the cord to the detriment of the child. At the child's first outing, the mother lays little bundles of wood and grass in its path to keep the child safe from the spirits; and if it has to pass through water, the relatives throw stones in first so that the spirits stay there and leave the child alone (Vetter, 1897:101). The naming follows shortly after the birth, usually the child receives his name after relatives or the dear departed, but also after other persons or objects, or after certain events that people want to preserve through the naming. Outside persons after whom

Natives of the village of Ragetta, Kaiser-Wilhelmshafen

the child is named, may touch the child only when it is about ten years old; then a feast is given to the mentors [166] by the mother. There are no 'godparents' gifts, in our sense of the world.

Besides the father, the mother's brothers have rights of entitlement over the children. The child does not apply relatedness so much to the mother and father as to a family group. Considered as father and mother and titled as such, are the father's brothers and their wives, and the mother's sisters and their husbands. Children of the same sex are regarded as true siblings, while children of the opposite sex are considered only as cousins. Kinship among the natives is thus far more extensive than with us, while the concept of relatedness in cousinage in particular, is narrower. It is worth mentioning that the age-difference of mutual parents determines the designation of a sibling as an older or a younger brother, or as an older or younger sister; it is therefore possible that someone is older than his cousin, and yet is designated by the latter as a younger brother because his parents are younger than those of the other (Vetter, 1897:88).

There are three known, basic systems of relatedness: one can assume that a child is related purely with his mother and his relatives through the mother's line, or with his father and his relatives through his father's line, or finally, with both parents and their relatives on both sides. Among the Papuans of Kaiser-Wilhelmsland none of these systems is legally structured. Nowhere is the right of entitlement totally withheld from the father; these, however, are qualified by locality in the mother's birthplace, and also in cases of death and the distribution of the estate the maternal relatives take precedence. The maternal relationship is regarded as the closer. Nevertheless, the maternal system of rights reveals itself to be no more fully formulated, as we shall see further on. Nor is there a system of pure patriarchy. In the latter, the wife appears to be in a slave-like position towards her husband. In Kaiser-Wilhelmsland however, wives are nothing less than slaves: the husband may neither sell his wife nor pawn nor lend her, and only rarely does one hear of poor treatment of wives, who always [167] will find support in their families, especially when the husband has only a small connection and little influence in the village. Therefore, we will not be far wrong, among the Papuans of German New Guinea, if we assume an intermediate stage between the paternal and maternal system of rights, where both the bond of the mother and of the father make a claim on the child, and lead to all kinds of accommodation imaginable. Thus, for example, guardianship is usually directed toward the mother's jurisdiction as a rule, while inheritance sometimes goes to the mother's jurisdiction and sometimes to the father's.

As indifferent as the parents are towards their children in the earliest stages, they are just as tender towards those surviving. As I have already said, they forgive them for everything, which usually turns out that later, when the children are bigger, they become disobedient and over-confident. In recent times the custom has evolved among friendly neighbouring tribes that when their children have reached a certain age, (ten to twelve years), they mutually send them 'boarding' for a year, in part to broaden their horizons and in part to give them the opportunity of learning the foreign tribe's language. Later, when they have returned home and grown up, these children gain a certain prestige in their home village and have at the same time gained the ability to serve as interpreters should the occasion arise.

The onset of puberty is not particularly celebrated among boys, but more the circumcision, whose timing usually coincides. However, this is bound by no particular age: little chaps of five years old and fellows of sixteen years and beyond, even those who are already married, may be represented here. It does not take place regularly, and it happens in a district only in periods of great abundance, because its embodiment depends, as a rule, on the availability of big pigs, because the eating of the pigs and the ceremonies and customs surrounding the circumcision seem to be more important among the Papuans than the ceremony itself. The women must not know the true state of affairs under any circumstance, otherwise they must die. They should believe in a monster (*Balum*) that devours their children, who then have to be released by the pigs. However,

they appear to believe in this only because, in reality, they are smart enough to understand the true facts. They know very well that [168] the boys are circumcised and the pigs eaten by their husbands, but they are very careful not to betray their knowledge. Circumcision is carried out in various ways: usually the foreskin is split or the glans is cut. The Yabim repeat it on individual boys probably on the occasion of pig markets, although then without ceremony; the wounds generally heal well, and hurt no longer than a week. The reason and benefits of this practice is given by the enlightened Papuan as the removal of bad blood, so that the boy's development will be more powerful and faster. Circumcision is customary in the neighbourhood of Finchhafen, among the Kei, Poom and Bukana people, around Simbang, on Astrolabe Bay, on several islands in the Archipelago of Contented People, on Buk, and in other locations. Generally, it is not practised in Kaiser-Wilhelmsland, for instance not on the Augusta River.

As has already been said, the operation itself is coupled with grand ceremonies. First of all, the candidates for circumcision must maintain a strict diet for a month before the circumcision, and avoid all foods that could cause heavy bleeding. Then, amidst the howling of the women, who have to keep their distance, and the rod-blows of the men, the boys are conducted to the place appointed for the circumcision. There is the dwelling of the *Balum*, which, according to myth receives the boys into its stomach in order to return them some time later as vigorous fellows. A long hut, about thirty metres in length and lower towards the back, passes for the belly of the *Belum*. The missionary Vetter describes the carrying-out of the custom in the Simbang region as follows: in front of the hut entrance big eyes are painted on the plaited palm, and up above, the root of a betel palm projects, indicating the hair of the monster; the rest of the palm trunk represents the backbone. A humming sounds from inside the hut every now and then: the voice of the *Balum*. This noise is caused by the so-called *balum*-woods: flat, lanceolate pieces of wood about a foot long, swung on a string in wide circles around a bamboo stick ¾ metre long, sometimes faster, sometimes more slowly, producing alternating higher and lower tones. The faster the swinging, the more melodic is the buzzing. Similar pieces of wood are found in Beliao in the [169] Archipelago of Contented People; there they are thirty centimetres long, flat, spatulate and made from bamboo, with carved patterns; these pieces of wood are never traded. When they have all arrived at the hut described, for the *Balum* ceremony, they call the *Balum* by name, and invite him to come out, by blowing on conch shells. If he lets his voice be heard, it is said "the *Balum* arises". The men raise a shrieking song and, to save the boys from destruction, several pigs have to be sacrificed to the *Balum*. The women and children had to leave the village beforehand. They had to stay away, camping in huts that had been built for this purpose in the vicinity of the village, until the spirit had left the village once more. But even earlier, while the men were building the hut for the *Balum*, the women had to avoid coming near the hut itself or the candidates for circumcision. For as long as they are in the village during the critical period, they have to provide themselves with certain drum-like instruments, just in case, for protection against the *Balum* spirit, and the danger of approaching the circumcision candidates. The instrument is a foot-long bamboo tube with a longitudinal split a finger's-breadth wide; by knocking it with a piece of wood, muffled tones are generated. Whenever the women walk around in the village, that is, leave their houses, they beat the tube incessantly, while the circumcision candidates for their part use strange bamboo flutes to announce their proximity, and so a mutual encounter is avoided. The flutes consist of a tube, which they blow into at an angle from above, and a plunger inside it. Depending on whether the tube is lengthened or shortened by blowing or sucking on this plunger, higher or lower tones are produced. Any Papuan woman who sets eyes on such flutes is doomed to die, in the opinion of the natives; therefore, as soon as she hears those sounds from afar, she retreats as fast as possible into the thickets. Such flute-playing is permitted only during the critical period before the youths' circumcision, and the flutes are carefully stored in the meeting house afterwards. On one occasion when missionary Vetter had cut these small bamboo pipes, to give pleasure to the young boys of

his school in Simbang, it was pointed out to him by the village elders that this was very bad, and the flutes were taken away from the boys, who were very sad about it. [170]

When all the women have finally left the village, the circumcision proceeds. However, all the prescribed ceremonies have to be fulfilled. After the circumcision, the boys have to spend a certain time there, inside the *Balum*. Should one of the youths by chance die during the circumcision, which is probably very rare, the men use the following explanation or excuse to get themselves out of it: they say that, besides the human stomach, the *Balum* monster also has a pig's stomach in which, to his misfortune, the boy inadvertently fell. A certain time later, all the boys come safe and sound out of the human stomach, after they have been ransomed by the pigs. The *Balum* is then satisfied, and gives the boys their freedom. Thus, during the ceremony the *Balum* does not run away, and, even before, the *Balum* is tied up with ropes by the men, for the greater safety of women and small children. The untying of these ropes corresponds with the final act of the ceremony, after which the *Balum*, according to native belief, returns to his underground dwelling. Finally, he also waived his right to the bodies of the pigs in favour of the men, and contented himself with the souls of the sacrificed animals. The pieces of wood are returned to the meeting house, and the boys solemnly led from their seclusion out into the village. They have now attained the right to listen in, as soon as conversation turns to matters of circumcision, and to take part in the feasts connected with circumcision ceremonies in the village and beyond.

In Berlinhafen, the huts where youth-circumcision takes place are called *Karewaris*. These are tower-like houses with tiny rooms where the candidates remain isolated for a long time even after circumcision. Entry into these huts is prohibited to unauthorized persons. It seems to be in stark contrast that the *karewaris* are located indiscriminantly among the houses in the village, and that the unsecured entrance is covered only with simple grass curtains. And so, going in or looking inside is made all too easy. Without doubt, the large plaiting with bright leaves, similar to a beehive, which Dr Lauterbach came across in 1896 in Wodsa near the Elisabeth River, whose significance he could not explain, had been nothing other than a *Balum* hut. The natives there called it *Tomburan*. In any case the celebration of circumcision causes [171] a great hubbub everywhere; during this period the natives are unavailable for trading, recruiting, and the like. What is more, during this period, among the Yabim — which is especially remarkable — a type of *Treuga dei* [Truce of God] is said to exist: no killings may occur, yet, in reality the mutual fear and feuding among them is curbed only very little by this prohibition.

At the onset of puberty girls have to stay inside the house for about six weeks. At the end of this time they are bathed and adorned by the women and then presented to the solemn gathering of fellow villagers. In their honour, naturally several pigs are slaughtered and the women entertained. The acclaimed girls are spectators, since they are not permitted to enjoy anything of the festive roast. Very soon after this point, the girls' marriage usually takes place, at an age of 14–16 years. It is rare that a girl remains unmarried.

Polygamy prevails among the Papuans. However, with them, as with all more primitive people where conjugal relationships are still at the developmental stage, the view is that the woman, so long as she is unmarried, can abandon herself to any friend in the tribe and only after she has entered into marriage must she remain faithful to her husband. Among those peoples at the polygamy stage, if a man has only one wife it is because he cannot afford the price of more. Marriage negotiations take place with the bride's clan, and the bride is sold, whether she has consented to the marriage or not. The perception here is usually that the women, as with other goods, are the property of their kin. As is known, the very first stage of development of individual marriage for the wife, comes through plunder. The Papuans of Kaiser-Wilhelmsland have gone far beyond this stage; as an extension of this practice, there appears among them the custom, widespread among other peoples at a lower level, that close relatives, father-in-law and daughter-in-law, mother-in-law and son-in-law, as well as brothers and sisters, see one another as little as

possible, and may not talk to one another. This custom developed further, in that the people mentioned above could not even mutually utter their names; not even when that name had already [172] been passed on to a younger member of the family. If, for example, a child is named after his deceased paternal grandfather, the child's mother cannot utter this name, and the child must be given a special name by which the mother addresses him. Indeed the Papuan goes so far that he is afraid to utter his own name. And so, it is a peculiar effect that, when asked his name, he usually does not reply but turns to a friend or companion who happens to be nearby; the latter then gives the desired response.

If a young Papuan male has given his heart to a Papuan beauty and wants to court her, he must first and foremost turn to the maternal relatives of the chosen one: firstly her uncles. Of course he also has to gain the consent of her father, but the former have the casting vote; they and their sons also receive a large share of the purchase price, which is paid to the girl's father by the husband's relatives: father, brothers, uncles, cousins. It consists roughly of a boar's tusk, several nets, spears, pots, and iron. If there is no boar's tusk, this is substituted by a bag decorated with dog fangs. Anyway, the price is no greater than you would pay for a two-hundred-pound pig. If the bridegroom were able to make full payment without help, that would be a rare event. In the natives' view, they very well appreciate the difference between this kind of purchase or, more accurately, exchange, and the purchase or exchange of valuables; they also have different words for both types. If the daughter is marrying outside the group, her father gets the biggest item in the dowry; should she be remaining within the village, he usually goes away empty-handed; the work of the son-in-law will be taken into account, however the father must satisfy the claims of the girl's maternal relatives.

In the bride-price, matrimonial property is lacking since the wife, as it were an asset item of the husband, cannot have an asset. If the Papuan wife in Kaiser-Wilhelmsland maintains, exceptionally, something of an endowment, she tends to keep it mostly as her special property. However, this requires the husband to reciprocate significantly with a corresponding counter-gift. Items of value that would be available solely to the wife, [173] are not brought into the marriage. If the husband comes from outside the group, and if the dowry remains unpaid or is not yet fully paid, the husband stays in the wife's dwelling until payment is complete; otherwise the couple live with the wife's parents after the wedding, sometimes for a long time, although as a rule she follows her husband to his village.

The married couple are usually the same age, or the husband is a few years older than his wife. A younger man never has an old wife, nor does he marry a widow. Marriages-by-inclination occur, although these too are by purchase. Should the maiden have a decided aversion to her future intended husband, she resigns herself to her fate usually soon after the coaxing of her mother and other relatives, who suggest to her that in cases of refusal she might possibly be bewitched. Rarely do Papuans have more than four wives, and probably only the more affluent ones, or the chiefs, have more than one. Papuan wives are no friends of polygamy, and often they have sufficient power and influence to prevent the selection of an auxiliary wife. If anyone has several wives, usually the last acquired is the most preferred. Outwardly this becomes apparent when she holds the husband's valuable items for safe-keeping.

Wedding celebrations do not take place: the girl's relatives take receipt of the bride-price, those of the husband slaughter a pig or a dog for the wife's family members, particularly her uncles, brothers, and cousins. The bride's relatives take this meal in the absence of the bride and groom and their parents; the bride goes about as usual, while the bridegroom does not let himself be seen on this day. It is said to be the custom among the Yabim that he is sought out and seized by his friends in the evening; he is dragged into the house of his chosen one, and not uncommonly one of the relatives lies down in front of the house, so that the pair can spend the night together. Abductions also occur, but only if the wife is willing. The pair then flee into the forest or perhaps

to a neighbouring village. If the abductor's relatives can pay well, the matter is probably laid to rest and the couple remain together. In other cases however, things do not go so smoothly.

Impediments to marriage can be found even in the primitive levels of individual marriages; however, these are limited to the very next [174] level of relationship and are not regularly observed. Close consanguinity is usually a marriage impediment among the Papuans. Siblings, uncle and niece, aunt and nephew cannot get married, although probably a brother-in-law and sister-in-law: i.e. a man and his deceased brother's wife. It can also happen that a man takes the daughter of his mother's brother. However, he is never allowed to take the daughter of his mother's sister. It does occur among the Yabim, though very rarely, that a man takes a widow, along with her daughter at the same time, to be his wives, but such a relationship is repugnant even to the natives. Generally the older daughters are married first; only in exceptional cases is it the younger. Deviations from this tradition always give rise to talk in the village. Marital fidelity is very often violated on both sides; also, young girls rarely keep themselves pure. This is to be expected, since the children, particularly among the Yabim, hear lewd words and obscenities out of the mouths of their parents from youth onward. The wanton behaviour of their daughters is usually not concealed from their parents, but they do not prevent it. Even if illegitimate children are rare, this is precisely because marriageable girls will soon be married and widows remain single only for a short time. If a wife allows herself to be seduced by another man, her purchase price, at least in part, must be paid back by her relatives to the relatives of her husband. This does not happen if there is any kind of guilt also on the part of the husband: abuse, infidelity, and the like. It seldom happens that the deserted husband takes his wife back; he always forbears to do this when the wife's attachment is stronger than his own. In a marital separation the older children go with the father as a rule, while the younger children are taken by the mother. In any case, there is never a formal divorce.

If the husband dies, the widow usually returns to her relatives. Among the Kei people, after the death of her husband, the widow, with her consent, is strangled by her own relatives and buried alongside the deceased. This situation had been observed on two occasions, by the missionaries in Simbang and on the Sattelberg respectively. The children generally do not stay together with the surviving widow, but go to other close relatives: a married [175] brother or uncle; however, there is no set rule. Younger children are provisionally retained by their mother.

Outwardly, the women in Kaiser-Wilhelmsland are shy and reserved, and only rarely do they cast off this character, often worn just for show, particularly towards Europeans. We come across pretty, sweet, girlish figures in the Bunu territory, and they are also skilful at adorning themselves nicely. Likewise in this respect, the small Siar girl from the Archipelago of Contented Peoplestands out from the other women of the Protectorate; furthermore, the girls from Bogadji on Astrolabe Bay appear very neat and tidy, as do the Bilibili women. We come across hideous representatives of the female sex on Langemak Bay, the Ottilien and Augusta Rivers and particularly sloppy and dissolute womenfolk on Dampier or Karkar.

You feel heartily sorry for the poor women when you see them in the evening returning home from the gardens, often panting under their heavy loads. In a carrying basket, or bound or knotted in bast fibre, on their backs they haul firewood, water jugs, taro, yams, and other produce that they bring home from the field. Women on the coast have a better life than those in the interior. To get to their gardens they typically use small canoes, which they themselves paddle or their children. The women there seem very cheerful and good-natured, and not at all do they give the impression that they have been working. If a man calls out to them in passing, they nod to him, highly amused: they readily enjoy a bit of flirtation. If you favour them with a couple of sticks of tobacco, they smile, showing their beautiful white teeth and, with the usual "*o tamu*" they say good-bye while hurrying to the nearby native village. There, the job of cooking and preparing the meal awaits them. And when this is done, it quickly becomes still in the Papuan village; the

shadows of night descend upon the peaceful residents, who seek out their mats. Only occasionally is the peace interrupted by the hideous howling of a Papuan dog. At daybreak it is again the women who leave their couch first. After they have cleaned the corridors and probably also swept the beach neatly, and then after a light meal, they head off for work accompanied by the little girls and sometimes also by the boys. Parting words are barely exchanged. This is so foreign to us, as [176] is the perception that the reunion, even of close relatives, and even after a prolonged separation, takes place without any expression of feelings.

Little Papuan children, boys as well as girls, are dearly loved; they also act a little shyly when they are noticed and, when they are addressed by a stranger they bashfully hold their hands in front of their eyes, especially the little girls; yet they are already more trusting when they are approached a second time in the village. If you are seen more often, and they know from experience that you have tobacco or a small toy with you, they leap towards you in a friendly manner on your arrival, showing off their little bows and arrows, or whatever they have that is remarkable in their eyes, and try to catch the attention of the new arrival all for themselves, in their way. On average they are clever and docile, and the missionaries have repeatedly assured us that if they could only bring about a more regular schooling for the little ones, they would have no serious problems with them. Learning to read gives them more pleasure than the tedious writing lessons that will soon be upon them. They would much rather be set to learn a useful craft, but in this regard the missionaries in Kaiser-Wilhelmsland do not seem to have gone about any trials.

Like our children, the little Papuans are great at inventing all kinds of games. There is a real joy in watching the little black figures in their childlike pleasure. The play “black man” like our kids; they have ball games like ours; and a game similar to our bull-rush. They particularly like war and hunting games; even our notorious “tick” and “chain snatch” seem to be represented. More rarely do you see the little girls romping round in the village; only when they are very small. These young Papuan girls love to provide childcare services to the children of the Europeans, and do so with outstanding skill; their zeal in this is admirable. They love to go to the missionaries when they know that the latter have young children, and they pester the missionaries’ wives to hand over to them the service of caring for their little darlings; it is conceded the earnestness and devotion with which they exercise the duties of their office! They know exactly how best to soothe a little screamer, and to accept with bright eyes, in the event they have given very good service, [177] the praise from the mother’s lips towards her little protégé. The little girls of the village compete so fiercely to provide these nanny services that the missionary wives see themselves as compelled each day to entrust another little one with honorary service towards her baby. With half a stick of tobacco as a reward, or a gift, they go home contented in the evening, and count down the days until they are again in line to play nanny. Papuan children are dearly loved, and at the demise of their little progeny the parents show a deep and sincere sorrow. In certain tribes this goes so far that they do not have the heart to bury the body of their little darlings. After death they embalm the body with red chalk, wrap it in bast fibre, and store it for a long time in their house. After the first pangs of separation have passed, they bury the body in the ground.

e. Illness, Death, Burial

Thanks to their simple way of life, the natives do not suffer much from disease, yet they are no more free of malaria than the Europeans. A peculiarity of fever among the natives, is that in many cases where a fever is involved, the body comes out in severe, red, oozing eczema. As a fever remedy they turn to their panacea: blood tap from the forehead or back; or they firmly wrap the temples and occipital regions with a cord, or, finally, they put the sufferer in front of a good fire, to

drive out the fever. Yet another fever remedy that is used a lot by the natives of Simbang and Finschhafen is the *muju* bark, whose smoke is said to drive out the disease.

The population of Simbang suffers more from disease than the natives anywhere else and, according to the reports of the missionaries stationed in Simbang, population numbers have declined rapidly in recent years, since deaths have far exceeded births. A forty-year-old man is a rarity there. Also, in a few villages on Astrolabe Bay, Gumbu and Korrendu population numbers are declining more and more, while almost everywhere else, at least on the coast of Kaiser-Wilhelmsland, they are steadily increasing. Very widespread in the south of Kaiser-Wilhelmsland, particularly among the Yabim, is [178] beriberi or elephantiasis. In the forefront of skin diseases is ring-worm, an ugly disease that is so contagious that you rarely find a village that is ringworm-free in Kaiser-Wilhelmsland. The Bunu natives appear to be totally free of this dermal evil, as is also the population of the middle Augusta River.

Half of all the diseases among the Papuans consist of ulcers, among which foot and leg ulcers are the most prevalent. The reason for this is partly due to the lack of clothing, and partly because wounds are not taken seriously enough, and worsen rapidly as a result of careless treatment and uncleanliness. Less common are sexual diseases; syphilis is still not observed among the natives. Pox has already afflicted Kaiser-Wilhelmsland at various times. In 1893 it was unfortunately brought into Stephansort by a Javanese coolee transport and then, despite all conceivable measures of barricading, it penetrated as far as the island village at Kelana. Of the Papuans who had been recruited as labourers in the service of the New Guinea Company at that time, that particular epidemic cost 351 lives. A few years later, smallpox, probably introduced from the north by Malay traders, raged terribly around Berlinhafen and the surrounding area. Also, many years ago a smallpox epidemic prevailed among the Yabim. As for other dangerous diseases, dysentery occurs here and there during the rainy season, abating only during the dry period.

Mental illnesses are rare. However, it does happen that here and there a sick person, possibly afflicted by sunstroke, runs around the village half-crazy, and is made a fool of by the children to their heart's content. The adults then intervene, and calm the patient, prsuading him to lie down. Such conditions are usually associated with fever, and are usually only temporary.

Worthy of mention is the 'flu, which in recent times has become almost endemic among the natives, peaking during the rainy season. Apart from foot and skin ailments, the native makes a lot of fuss about his illness. You can hear him moaning and groaning and, with a true martyr's face, he laments to those visiting him, about his suffering. If [179] you suggest this or that remedy for curing or alleviating his suffering, he sadly shakes his head defensively, which is probably supposed to mean "this is all in vain, I am indeed bewitched." For any serious indisposition our Papuans invariably trace it back to a hex, and should the sick person die from his affliction, the charm of his enemy is the sole cause of his death.

Burial is usually carried out in the ground, underneath or near the houses. As with the bodies of children, they readily retain the corpses of respected persons in the house, and bury them only after some time. In the Bogadji villages earlier, you often encountered the deplorable custom of the corpses being covered with sago palm leaves and usually being preserved in a sitting position, in the houses. The corpses buried in the ground are not uncommonly exhumed a short time later. The lower jaw is separated from the skull and kept as a relic; the rest is thrown away. Zöller found the style of burial mentioned above, in the houses themselves, inland from Astrolabe Bay, in the village of Kadda for instance. In each of the village huts there, one or two corpses wrapped in mats were propped up against the wall in a squatting position, their knees drawn right up to their noses. Moreover, in the area of Astrolabe Bay right up to the Sziganu massif you not uncommonly find one or more smoke-dried, [180] firmly-wrapped mummies in the houses, anxiously guarded by the family members; otherwise, it is customary in the north, as in the south, to bury the dead in the ground. The duty of burial lies with the maternal relatives, in the Bogadji

villages next to the deceased's namesake, who thus has a claim to a small share of the estate (Hoffmann, 1898); whether he receives this as compensation or as rights of inheritance has not yet

Chief's grave at Finschhafen

been satisfactorily explained. A hut is probably erected quite often over the grave; the relatives camp out there for weeks after the death, the widower or widow cowering in the corner and almost unrecognizable because of dirt. For, according to Papuan custom the widowed partner is prohibited from washing during the initial period after the death of a relative. The real reason is not evident. In the Rook Islands, the graves, which are situated in front of the houses are usually surrounded by a small tubular fence; inside the fence a fire is maintained for a month after the death by the relatives of the deceased, so that the soul does not freeze, and for several months the widow has to sing a lament every morning and every evening. Only after this period is the fence destroyed, and a feast concludes the whole episode.

Big ceremonies are organized after the death of a chief. After the burial, which is otherwise no different from any other, a funeral dance is performed at night over a long period, while a dirge is intoned. The friendly villages come from all sides and make known to those directly affected by the loss, their indignation that they had to let the chief die. Blackening of the chest and face with manganese applies universally as a sign of mourning. Among the Yabim they put on mourning cords. Moreover the widower tends to wear a mourning hat and the widow a mourning net; this mourning adornment is almost universal in Kaiser-Wilhelmsland. The ringing of bells at the funeral is replaced in Papua by the blowing of conches or bamboo flutes, which sound out eerily through the village after a death, and echo in the mountains. A big feast, with pork, is generally associated with the removal of the signs of mourning. The end of the mourning period is determined by the [181] relatives of the deceased; it all depends on whether the surviving party is in a position to give a pig or not. It is not uncommon for the lifting of the mourning period to be

undertaken at the same time by various widows and widowers, so that the feast is so much the greater. It does happen that the signs of mourning are only laid aside years later; however the widowed persons are at liberty to marry earlier.

3. Social and religious relationships, Spiritual life, Character, Language, Dance, Amusements

Probably all Papuans in Kaiser-Wilhelmsland believe in a life after death, although their ideas about it are very unclear. The Siar people and other natives of the Archipelago of Contented Peoplelocate the hereafter in the mountains of Cape Rigny; they praise it as a country where there is an abundance of everything. The Yabim give fire to the soul of the departed for their pathway. The custom is as follows: the first night after the death of the departed, one of the most respected villages takes a piece of burning wood, stretches it out in front of him and calls "Your children are crying for you. Come, and take the fire!" After the presentation by the natives the spirit is induced to come; takes the fire and rushes out with it, at the same time indicating the direction that should be taken to reach the house of his enchanter. In order to follow the glow better, the closest relatives head out to sea or climb tall trees. As fearful as they are, natives never go out at night without a firebrand; they do not want the soul to go into the afterlife without one either. The Kei people locate the "fields of the blessed" on one of the Siassi Islands south of Rook.

Thus each tribe has its different "*Lambon*", where the soul floats after death, and indeed there are, particularly according to the beliefs of the Yabim, in each "*Lambon*" different divisions for individual forms of death: a special one for the slain enemy; another for those who have lost their lives through enchantment; and another for suicides. The *Balum* is regarded by the Kei people as an intermediary, whose help and guiding of the departed souls in their passing-over into the "*Lambon*" is indispensable. [182] The Papuan Charon thus has the same designation as the spirit that devours the circumcised and who, as we shall see below, plays a role in ancestor worship.

It has already been indicated that the *Balum* cult is also related to ancestor worship. Every village has a whole pack of *Balum* sticks, always including a few that are named by the living in honour of the dead. These are especially cherished, and carefully guarded and preserved. This is a kind of ancestor worship. With the entrance of the soul into the spirit realm, it also becomes *Balum*, and so we find a fourth concept designated by the same word.

In the spirit world the souls of the dead live a blissful life; only enchantment, which is so deeply-rooted in the superstition of the Papuans, continues further there (Vetter, 1897:94). In this way, in the view of the Papuans, a second death is possible, whose outcome is the transformation into an insect, for example a white ant.

Generally, after it has left the body the soul does not remain permanently in the "*Lambon*" but prefers to seek out its home village again, particularly at night; and the adverse impact that such a stay exerts in the village is a constant concern in the lives of the Papuans. They hear the spirit nocturnally pursuing its activities in the forest; they know that towards evening it likes to lead astray those who are peacefully wandering home at nightfall, and wreaks a haunting on them. They also believe that the spirit even stays for days near the village itself, but to remain unseen it transforms itself into leaves, ants, worms and the like. Like the souls of their own dead, so too the souls of departed Europeans float around like will o' the wisps, in the Papuan belief of; thus, at the death of the wife of Governor von Schleinitz, the natives of Simbang steadfastly maintained that they had seen the spirit of the very popular "Dankeo", as they called Frau von Schleinitz, flying through all the coastal villages in the form of a white light. [183]

Because they fear the spirits of the dead, they prepare a funeral feast for the deceased even before they bury him, and place everything that he might need on his journey to the spirit realm, in

Plate 19

The village of Erima

The village of Suum with the idol

the grave; furthermore, they make a sacrifice to the spirits when they set up a garden, so that they will not have poor harvests, pronouncing the following apostrophe, "You grasshoppers, worms and caterpillars, you are dead; go back to the village." In short, they do everything to stay friends with the spirits of the dead. Yet, the natives also know of domestic spirits that confer health and wealth, however the spirits of the dead do more harm than good, and even small children, as we have seen above, have been exposed to their harmful influence.

The religious ideas of Papuans, as far as we know, are restricted by and large to their spirits and ancestor worship. Here and there in individual families among the Yabim and others, one imagines the survival of the deceased in the form of animals, crocodiles, pigs, worms, and other creatures, and so totemism is also familiar to them, i.e. the idea of formerly having had an animal in the relationship, and its veneration for this reason. Many derive their origin from a pig, and therefore abstain from enjoying pork; others again, protect the crocodile because their ancestress has simultaneously given birth to a crocodile alongside their ancestors. Whoever has such a relationship through their mother, will, according to the view of individual tribes, be transformed into that animal after his death. It is noteworthy that if others kill an animal to whom a person believes that he is related, he has to undertake a duel with that person, and has to give a funeral meal in honour of the departed related-crocodile, wallaby, or whatever it was.

Inside the meeting houses, for instance in Bilibili, you often see carved on the cross-beams of the gables artistic animal figures like lizards, turtles, fish and birds, undoubtedly in honour of ancestors who have crossed over in that form, or have descended from them. Among the natives of north-eastern Kaiser-Wilhelmsland, both on the mainland and on the islands, we find finely-carved, brightly-painted, grotesque wooden figures with a nose like a bird's beak; in Astrolabe [184] Bay it is characterized by an outstretched tongue. Smaller wooden figures occur just as often: imitations of male and female forms with a hair-basket on the back of the head and a beard of human hair. Most of these figures have the arms hanging down, and are painted red. These representations are probably nothing more than images of ancestors who are upheld, in the belief that they grant good fortune and protection. Without doubt, the miniature masks that the men sometimes fasten to their carry-bundles have the same significance.

A limited nature cult is recognised as going hand in hand with ancestor worship among individual tribes. Notably, the sun and moon are worshipped. For example, the Yabim believe that an *Abumtau* (mighty one) lives in the sun, and that each appearance of the full moon gives all Papuans in Kaiser-Wilhelmsland a welcome opportunity to perform dances and to hold pig feasts. In Finschhafen moon, lightning, and stars are also designated as *Abumtau*. They give the same designation to their carved human figures erected in the meeting house. All Kei tribes can talk of higher beings: a male *Ding* and a female *Gakweng*, to whom they ascribe tremendously large body form; they are represented symbolically by the bamboo flutes that are blown on at the times of circumcision. However, the idea of a higher being exerts virtually no influence at all on the Papuans; although, as we have more often already had opportunity to observe, belief in enchantment and hexing control their activities to the highest degree; any attempt to dissuade them from this would be quite a futile undertaking. A great sorcerer in the neighbourhood of the former Finschhafen station was Makiri, chief of Kolem, who could not only bring about wind and weather, rain and sunshine, but could also visit death and illness upon those whom he wished evil. For example, people have heard tell of the time when Saguan, chief of Siu, lay suffering from some illness, he firmly asserted to everyone that Makiri, the villain, had enchanted him. Usually however those enchanted, i.e. those people who consider themselves to be enchanted, drift about uncertain as to the identity of the enchanter. To find this out, they listen eagerly and anxiously to the words uttered by a patient in fever fantasies or in a dream, or, in the evening after a death they light a fire in the village [185] and name, one after another, the many people whom they suspect could have brought about the death of their friend by sorcery. Should the fire flare up brightly at

the utterance of a name, then that person is assumed to be the perpetrator. Overriding this is the attachment of the deceased in various ways, as we have seen above, but only if the deceased is a person of prestige. It occurs more slowly and less often when the attachment of the alleged hexxer is too powerful or the latter is a professional sorcerer with whom you would not want to spoil things for future cases when his help might be needed against an enemy. However, should he have no great connection, he should, especially if he is not a professional sorcerer, probably leave the village as soon as it is rumoured that he is the hexxer; in other cases he drifts about in constant mortal danger. But even the professional sorcerer is not uncommonly exposed to danger and discomfort. This happens often in cases where he has not done according to wishes: he is called on for compensation. For example, if the rain has gone on, and if the rain, which is coming down in torrents, does not want to stop, he is liable for the damage done to the crops by the excessive rainfall. The tools that he uses in his manipulations are of various kinds.

Son of the Kolem chief

As an instrument of enchanting, almost always something is needed that has had some connection with the person to be enchanted, such as food waste, hair that has been shed, a piece of old material, and the like. All these things are aids to the sorcerer; therefore, the natives take painstaking care of what they discard: especially when eating they throw shells and remains on the fire, and likewise destroy hair that has been plucked out. If, by chance, their hair gets tangled in a bush, they carefully look for every individual hair. People's [186] fear of being enchanted is so great that finally they prefer not to go out of their village for fear that they might lose something in the vicinity of the neighbouring village, that an enemy could use as a means of enchanting.

The Papuans recognise the following as magic tricks and oracles:

For example, he places a small object, such as a little stone or a cockleshell, on the tip of a rod stuck in the ground, in such a way that the object is balanced on it. Beforehand, he has streaked the rod and the object with red magic dye. Then somebody asks a question, for which they want an answer. If the object does not move, that means "No"; if it falls to the ground, then the presumption of the questioner is confirmed as correct. Alternatively, they use the following aid to discover, for example, the person of their enchanter: they place a small container on a strong leaf stalk; when the correct name is uttered it begins to rotate. Often requested from a professional sorcerer, on behalf of a patient, is the identity of the man who is regarded as the cause of the illness. He is offered a ransom, after its adoption, because they imagine that the illness will weaken. In general the sorcerer can do everything, and, as well as bringing about rain and sunshine, he can also bring about good fishing, good fortune in hunting and in trading missions.

In other ways too, superstition has a great influence on all activities. If a major fishing expedition is in the offing, preparations for it are carried out in total silence because, should a word be spoken, the fishing expedition will fail. White spots on the fingernails brings about misfortune, in reverse from us. If an unauthorised person has touched the net or the already-prepared fishing lines, then they are unfit for use on the forthcoming fishing expedition. If that net was, nevertheless, used, the fish would not go in it, and the fishing lines would break. Among the Yabim the sea eagle is considered an unlucky bird. If it happens to fly past when bananas are being

planted, you can be sure that the plant will not bear fruit. Since red is the auspicious colour and, as such, the most popular, they also like to plant red shrubs between the taro in order to have a good harvest.

As a talisman for protection against evil enemies or adversity, [187] our wards carry those little wooden figures in their chest pouches, and in their purses anything possible that will shield them from danger, such as round pebbles, dried tree leaves, ginger and, further north, *massoi* bark.

Also, the *tabu* institution is familiar in Kaiser-Wilhelmsland and throughout New Guinea. This is the custom, inherited from the Polynesians, of making certain items, or persons, or locations untouchable or inaccessible for a certain period or forever by assigning them *tabu*. Enchanted dried grass, sometimes with a fish tongue wrapped inside, attached to an item in the forest or the field, or placed on the trunk of a fruit tree, defends the ownership of that item. A bunch of coconut or other leaves placed at a suitable, obvious point on a coconut palm trunk preserves the tree from being deprived of its fruit, so long as the *tabu* sign adheres to it. Violation of the *tabu* attracts disease and death. It is characteristic of the custom that for inadvertent violation of the *tabu*, enchanted water is a valid remedy that the depositor of the *tabu* extends to that violator. Very often in Kaiser-Wilhelmsland you see coconut palms labelled with such a *tabu* and you often wonder, so long as you do not know the custom, why the natives protect individual trees and do not pluck their fruit. In certain areas there is the custom that after the death of a long-established villager his coconut palms are untouchable, or even that a coconut palm that belonged to him will be cut down in his honour. For women and children, meeting houses are also *tabu*, and every Papuan woman is superstitious enough to believe that anyone breaking this commandment would bring about her own death. The actual reason why women have been excluded from access to the meeting houses from the beginning may be found mainly in the fact that men carry out and discuss things that are not fit for the eyes and ears of women, (for example circumcision, councils of war, cannibalism), but also that the men do not want to be observed and disturbed by the women during their banquets in the meeting houses.

Other houses that are going to be unoccupied for an extended period, tend to be made *tabu* for that period by any outside sign that can be affixed to an obvious place. Boys and [188] girls are, as we have seen, also *tabu* a long time before entering puberty.

Of myths and stories, we have only very few from the natives in Kaiser-Wilhelmsland, and so far almost solely from those regions where there are missionaries; their calling has led them closer to the language and spiritual life of the natives. We have legends and stories orally from the Bogadji, Kei, Simbang and Yabim people, but on the other hand these are totally lacking from the north and the interior of the protectorate. The Yabim talk of people with tails who live in the mountains; the Bogadji and Kei people report on giants and dwarfs.

On Rook it is said that in very ancient times a tremendously big man, Puru, had landed there but had left the land soon after, having taught the natives the languages of the two islands. Variously mentioned already, we have the Bogadji legend of the two brothers, Kelibob and Manumba, the first fishermen in Astrolabe Bay, to whom a woman of the race of giants came down from the mountains one day. Kelibob married her, after he had triumphed in a struggle against his brother. The brothers made peace, but this, as expected, is short-lived. One day, when Kelibob went fishing alone, Mandumba seduced his wife. When Kelibob returned, he soon found out what had happened, but at first said nothing to Mandumba about it; he carved the story of his brother's adultery on the corner post of his house, in which they both lived. Soon after, he takes revenge on Mandumba. When digging post holes for a new house, he buries him. However, with the assistance of the bumblebee, which digs a long passage for him, Mandumba reaches the surface again, and settles in the forest at first, and later with his nephew, Kelibob's son, on the islands of Bagebag and Merijn (Rich Island and Long Island (Kurze and Regel, 1898:48))5.

The tale of the selfish man of the Yabim is so peculiar, that it follows here. We are grateful to Missionary Vetter who told us about it. An egotist used to go promptly to feasts in neighbouring village everywhere, but also took some of it home. Yet instead of inviting his family to this [189] he took it into the forest and there ate on his own. While doing this he had the habit of removing his eyes and placing them next to him. When he had finished his meal, he put them in again. Soon his family discovered his secret, and one day when he had gone into the forest with the supplies for his feast to indulge his appetite, his two sons slipped after him. There, they discovered to their delight that he had put his eyes out; while their father was still eating they took the eyes and made off with them. Arriving home, they put them in a container of water. When the selfish one had fully sated his body and was preparing to leave, he missed his eyes. Since he could not find them, he groped his way with great difficulty and piteous whining, back to his village. With feigned pity the members of his family approached, and left him to lament his loss until nightfall. Finally they gave them to him, with the exhortation that henceforth he should think a little less of himself and more of his wife and children: a lesson that all Papuans should take to heart in their selfishness.

The tale about people with tails is found elsewhere in New Guinea (cf Chapter 8,3) besides the Yabim. The latter certainly are intent on having seen these in the mountains, and dwarfs too. They even recount that not too long ago a small lad had been lost by their tribesmen. His appearance, right up to his small size, had been no different from the rest, except that he had very long growth of hair. Unfortunately one of the village residents had played a prank and cut off the dwarf's long hair. After that, he had fallen ill and died not long afterwards.

During the discussion of the *Balum* myth, it was mentioned that the *balum* sticks and flutes were kept in the meeting houses: a further word about the latter. In Kaiser-Wilhelmsland they serve as a meeting room, a council room, and a sleeping space for men, and as repository for certain items that should be preserved from contact with the profane. At the same time they serve as an asylum for the persecuted. We find meeting houses like this in every village in Kaiser [190] Wilhelmsland. In the north they are called Karewari; on Bilibili *Dschelum*; on Beliao *Szirit*; on Siar *Dasem*; in Bogadji *Assa*; in Bongu *Bruambrambra*. In the north of Kaiser-Wilhelmsland, for example on Dallmannhafen (Finsch, 1865:310), they generally have a bowl-shaped roof, a door at front and rear, and a steeply-angled porch roof from which leaf fibres hang down as a curtain. The open huts found on the Augusta River appear to serve as gathering places; in any case they are considered as a repository for the big signal drums, which serve as musical instruments at feasts. In the middle Ottilien River the meeting houses are very big and long (six metres wide, thirty metres long and ten metres high). Weapons, masks and equipment of all kinds are found inside. The fireplaces and sleeping bags clearly indicated that the houses were inhabited during the day and served as a bedroom at night. A peculiar carving appears on the eight-metre-high centre beam of the meeting house on Bilibili; it represents an ancestral lineage, according to Finsch. Four male and two female figures are carved on it, one above the other, and painted red and black. The natives call these figures *Maika*. A mat woven out of coconut palm leaves serves as an entrance door below. The upper floor has a platform, which leads to floor space. It serves as a space to sleep for unmarried men and guests. In the interior of the lower part lie shields, drums, sleeping sofa and a lot of pig lower jaws are hung there. The *Assa* house of the Bogadji people likewise has two floors, and is quite similar to the *Dschelum* on Bilibili. The *Szirit* on Beliao is only small; there is a small door on both gable ends, whose walls are made of matting; carved wooden fish hang out of the gable. Inside we find the sticks with pretty carvings that are similar to the *balum* wood of the Yabim. Out the front of the meeting house on Siar two mighty wooden images keep watch, one male the other female. The male figure has very long arms, a helmet-like headdress and a tremendously broad nose, while the nose of the female figure tapers to a point. In the interior several carved figures, including a dog, hang from the ceiling. The Siar people call these [191] *Agaun*. The *Tzelum* in Bruambrambra in Bongu is a big carving, 2½ m. tall, that represents a male

Papuan with a head that occupies half of the entire figure. In Kolem, on Finschhafen, long plant fibres hanging down from the roof decorate the gable sides of the meeting house. There are no carvings on the beams there, but you will find carving similar to the *Tzelum* figures of the Bongu people: two more-than man-sized figures constructed from tree trunks whose roots are still in the ground; a crocodile is carved on the back, and below on the front a type of lizard.

All events of great importance are carried out in these meeting houses by the men in the Papuan way, in an informal manner. Some chew betel, others smoke, while others again are laughing and joking; it all goes on very peacefully, with rarely a dispute, since they are behaving according to the old ways. The customs and traditions of their fathers are usually decisive. Seldom is anything significant undertaken before at least a few, probably the most respected among the village inhabitants, have been consulted about it beforehand; and thus the decision on a joint venture lies in the hands of a few people who have the greatest say.

Actual rank and class differences matter as little among our Papuan people as does the difference between rich and poor. The resentment and jealousy deeply-engrained in the Papuan character on the one hand, and the fear of enchantment on the other, does not allow either power or prosperity to arise among them. In this way it comes about that among the Papuans, the one does not have an abundance while the other starves. In the first place, they cannot express such a difference, since there is no word for it in their language. As a rule, a Papuan village consists of a large number of small family groups, each with a head of the family, who is called *Samo koba* by the Bogadji people. Outsiders find acceptance through marriage; children through adoption. The family unit usually has fishing and hunting rights at certain points of the rivers and in certain parts of the forest; joint ownership of the meeting house and possibly the large wooden drums stored there; and finally, also ownership of the stands of sago palms in the village. Sometimes, although not consistently, and then only where the feeling of togetherness is more developed, the tribe develops from individual village communities. [192] Here and there it brings a family patriarch to a dominant position in the village through his wealth and influence, attaining, so to speak, the position of “chief”. Of course, the prestige of a chief depends on the size of the place. However, you cannot speak of dominance on the one hand and obedience on the other hand. All the villagers feel free and independent, and the execution of a project that involves the whole village is based on mutual consent. Thus, we find among our Papuans the initial stirrings of legal and political life, small cooperatives for protection and defence still based in part on consanguinity but partly already on the commonality of living together: something between gender and district co-operation. There is mutual peace within their organizations; its interruption by other people of the same sex will be avenged; outwardly, they are hostile to those who do not belong to their co-operative, and if injustice is inflicted on one of their members by an outsider, vengeance is taken on the evil-doer usually by them all. And in the same manner as they stand together towards the outside, this often happens internally on behalf of one whose goods are insufficient to satisfy certain claims made on him from outside. The village community is held together outwardly by common language, common interests, and particularly, religious traditions. If the cooperative then expands into tribes or larger organizations, as represented in Kaiser-Wilhelmsland by the Yabim, Saleng, Tigeddu people or the Bongu, Gumbu, Korrendu, Matukar, Bumi, Dschundschumbi, Bang, and Ludebu associations, a particularly strong binding means is highlighted by the right of lawful marriage and joint celebration of larger festivals. If a man takes a wife from among his tribe or from a village connected by the law of intermarriage, she is deemed full and equal; but not one from a foreign village. The Bongu, Gumbu and Korrendu have intermarriage among themselves; the Bongu further with the Kolliku; the Male with Burramana; the latter with Korrendu, and so on. As for other associations, south-east of Fortification Point we find the Perru tribe; further south of Finschhafen the Bukana people; on Hatzfeldthafen the Kaiti, Tombenan, Amutak, and Dug association; on the Augusta River the Mechan-Malu; the Bogadji villages on Astrolabe Bay; and

finally the associations in the Hansemann Range [193] and on Dampier. However, such larger associations do not seem to occur too frequently.

As a rule the Papuans do not go beyond their village community. The reason lies in their linguistic fragmentation, and in their fear of one another. Usually they shyly close themselves off from one another, and even during a reciprocal visit from the inhabitants of friendly villages they almost always use the mediation of a host who introduces the stranger and accompanies him around. If a person is not known in the village, he is viewed from the outset as an enemy; in any case observed with very mistrustful eyes. Such a one is usually offered shelter in the meeting house as a friend, and is shown hospitality in a friendly manner, but it requires decorum: not wandering about too much and peering around curiously. That immediately shakes up confidence. Among Europeans, especially when they are introduced to the village by a native host, it is often observed that they look around curiously and touch everything. However, entry to their huts is granted only reluctantly, and they leave the hut (this is true particularly of women and children) as soon as a European enters. In fact, regularly women draw back, screeching, into the interior of their dwellings immediately they see a white man approaching their hut. Fathers prefer to show Europeans their small children, always emphasizing that these are theirs: paternal pride reigns even among the Papuans! A peculiar custom prevails on the Augusta River when greeting a stranger. If a friend comes into the village there, a roll of sago cake is pushed into his mouth, whereupon the chorus of bystanders shouts “ā ā ā – aa - ā ā ā”, (*Nachrichten*. 1888:32). Also, on the Ottilien River it is customary to offer friends who come into the village, sago cakes when greeting them. The chief of a friendly village is received with a certain solemnity; this is one of his few privileges. Probably a dog or a pig is slaughtered in his honour and, here and there, he receives a boar’s tusk as a gift. Of course, such costly visits might not happen too often, and the chief of the village which is visited, in turn gives the opportunity for recompense by an early return visit. [194]

One of the primary duties of the chiefs is, furthermore, the purchase of pigs for the village in the markets, such as those organized over intervals among the friendly villages. They are solemnly invited to such markets beforehand, and find themselves happily together on all sides. They walk around proudly, and usually give a boar’s tusk as the main contribution to the purchase price, while the rest of their fellow villagers contribute pieces of lesser value. Another prerogative of the chief is his distribution and serving at pig feasts; furthermore, it is he who sends a message to a friendly village when any kind of festive event, a circumcision ceremony or the like, is imminent in his village. Finally, the house of the chief bestows a certain right of asylum and his death is, as we have shown above, particularly mourned. Otherwise, as already said, his power and influence is only small. He has no command over either the goods or the life of the village inhabitants. As a rule he has greater possessions than the others, he accumulates most of the boar’s tusks; yet he bears no insignia of his dignity, he often dresses no better than the others and often lives no differently from them either. Possibly he allows himself a bit more leeway here and there, and people listen to his advice; it is also expected that he has an open hand and exercises his generosity on festive occasions.

The dignity is thus more of an honorary post, and the prestige of the chief specifically depends on the size of his following than his own ability. The chiefs Makiri from Kolem, Saul from Bongu, Amang from Siar, Kurom from Beliao, Szebock on Ragetta, and Abel from Bogadjim are well known. Other chiefs who have a greater influence are Kujauwei, the well-travelled chief of Matukar in the Bunu countryside, who has visited the island of Dampier, Rich Island, Bilibili, and the villages on Astrolabe Bay; Nabock from Matschi on Hatzfeldthafen; Annuro and Angara on Rook Island, Sumä from Boarba on the Sattelberg; Koji from Male; and the old *massoi* from Tarawai. The latter enjoys a very great reputation among the tribesmen far and wide. In Papuan eyes he is a very wealthy man who probably owes his great influence mainly to his wealth. At least, the chiefly character seems to be developed in the south of the Protectorate. A prerequisite [195] for the honour of chief is that he is a local of the place, i.e. his mother must be born in that same place. The successor to the position is usually his son. If the latter is still young, then a sister's son or a brother of the deceased steps in provisionally in his place.

Chief Makiri from Kolem

A certain communalism is inherent in all Papuans in Kaiser-Wilhelmsland, which resists every advance. Land is common property, i.e. every village community has its particular area, where no outsider may settle or lay out a garden without prior agreement. A newcomer has to join the community and till the field with them. There would be no question of remuneration in such a case. Any person who is authorised through his mother to call the village his home, is regarded as a participant in land ownership. Individual ownership of the land does not exist, therefore any land sale on the part of an individual is invalid. Sale or exchange of land for goods among the natives themselves does not occur at all, even for simple reasons, because every village has sufficient. An individual or families can have usufructuary use of the common land, and so long as they do this, their right is respected by their fellow villagers; custom gives them right of possession to the same but not anything else, thus no inheritance. When personal right of use ceases, at the latest, with death, then communal property comes back in full force.

The indivisibility of land ownership among the Papuans results in communal working: clearing the land and setting fences around the area to be cultivated is usually carried out [196] collectively by fellow villages or the family unit. However, it is customary that the sometime beneficiary of the patch is responsible for caring for the rest, and also has to contribute the produce from that patch to festivities within the family unit. The fruit trees already present when the village was established, are also communal property, otherwise they belong to the person who planted them, and his descendants. Wild pigs are likewise the common property of all fellow villagers. A

person cannot make free use of such a kill; they eat it communally. Such an honour also befalls any purchased grunting quadripeds, even if only individuals have contributed to the payment. Somehow there is a balance and, incidentally, the individual purchaser or the group of purchasers have the honour of having hosted the village. The slaughter of pigs as a rule is a matter for the maternal relatives, who also receive the main part of the livestock at the death of a native. The purchaser or the killer of a boar cannot do as they please even with the tusks; their use too, is also applied to the good of the community. Thus it should never enter anyone's mind to keep the boar's tusks or otherwise arbitrarily dispose of them. However if a person wants to sell his pig externally, nothing stands in the way. It is only too clear that such communality inhibits any increase in prosperity and broader aspirations. Under these circumstances it is futile for a Papuan to save, or to look to acquire wealth, he would then have to surrender it to the others or, on the other hand, he might be enchanted, or killed out of hatred or envy. In this way it is only natural that he would rather give up as die, and thus it no longer seems so surprising to us when we hear that dismissed workers who return to their home village barely remain three days in happy, sole possession of the goods painstakingly acquired by hard work over three years.

The natives are unfamiliar with a fixed base value. Trade is carried out by way of exchange, and current need or desire is crucial. One and the same item is given away on one occasion for a plane iron, and the second time for a stick of tobacco. If a better item is not there, the Papuan is sometimes content with less. The item of greatest value is a boar's tusk [197] but it must be closed in a ring. To the natives it is as valuable as a gold coin is to us. Our silver coinage would be matched by dog's fangs, about two hundred of which would equal a boar's tusk. A big pig equals two boar's tusks, or four hundred dog's fangs, or one tusk and appropriate supplements. However, far cheaper purchases are also made, so that you cannot speak of fixed prices; it is not uncommon for the seller to let the item go more cheaply out of fear of the influence and connections of the buyer. However, this does not rule out his venting his anger by swearing, with the firm intention of retaliating at the earliest opportunity. Nets, pots, spears, dyestuffs, red chalk, lava glass for shaving, purses, bracelets and other items, serve as a medium of exchange for smaller purchases. In general, the natives enter keenly into bartering among themselves.

Sometimes dogs and pigs are placed in care; sometimes the provision of fodder entails a knife or a net, occasionally also a boar's tusk. If the cattle beast dies or gets lost, the owner seeks damages; likewise in bartering when this or that item turns out badly. Should an exchanged pig die during transport to the place of residence of the new owner, the exchange can be reversed. Usually nothing is given against credit. Borrowing of items or tools is common; on occasion a reciprocal service is expected. The same is true with gifts. If one person receives a gift, then the other party expects a reciprocal gift soon. Lost property must, as a rule, be returned by the finder. Followers, and people of renown, do not regard the return of found objects so precisely; they cover the concept of finding with that of stealing. Even children are "found" in such a way. And so it was reported in the *Nachrichten über Kaiser-Wilhelmsland* (1897:97) that on one occasion at a festive gathering in a Yabim village a little boy among the members of a neighbouring, powerful village who had come to visit, was taken, as a "lost item", despite the protests of his wailing mother.

In the period of the gender co-operative there is as yet no question of an inheritance [198] for the wife and children as opposed to the husband and father, and where such an inheritance does exist among uncivilized peoples, the old traditions have already gone into decline. In the gender cooperative period, and probably also during the later period of development, goods are inherited only by the women, so that after the death of the father, the sons of his sister are immediately regarded as his inheritors. In the very beginning of statehood there is often a mixed system between the nephew-inheritance of the old gender-cooperative time and the filial-inheritance of the state kinship and successor system as, for example, among the people of Australia and New Guinea.

In Kaiser-Wilhelmsland after a death, the maternal relatives have to be settled first; in front, they receive the best items, weapons and jewellery. The children receive only the most necessary: a loincloth, cooking utensils, a spear, bow and arrows. After the maternal relatives come the sisters of the deceased, then his uncles and cousins. There is no common property between husband and wife. Should the wife die before her husband, the property is inherited by the daughters and maternal relatives. The nearest relatives, widows, parents, and children often have to fork out from their meager possessions in particular to satisfy the nearest outside legal heirs who come from afar for the burial. Since an estate has to be distributed following every death, when an immature child dies his parents and siblings tend to give gifts especially to the outside relatives. It often even happens that when the latter are resentful because of the small estate, even the totally-uninvolved fellow villagers contribute, only so that the peace is not disturbed. If the deceased were a chief or a a particularly respected man in the village, it is quite common for the chiefs of the friendly villages, who have gathered for the lament, to receive their share of the estate.

In addition to these fixed norms of inheritance, testamentary dispositions are very well observed. We thus find attestation and property law side by side. It also happens that a particularly wealthy person has already, during his lifetime, slipped items of value from his assets to his children, particularly, fine boar's tusks, that are allowed to continue to be inherited within the family. Indeed, in some [199] tribes, such as the Yabim, on the death of the father, sons can absolutely claim a part of the estate, especially if it is significant. If the son is still small, then not uncommonly a little something is set aside for him, and his father's brother, or, as in Siar, the mother's brother, takes custody of the items until the son is grown. However, most of the bequest must be distributed immediately, as the estate, and the existing livestock is eaten by the relatives during the mourning period, which often lasts for several weeks. To keep the peace and probably also for fear of bewitchment, many a blood relative foregoes his rightful claim in favour of a further heir. A deviation from the above-described succession is found in the area around Kela on the Franziska River, where the widow is considered heir to her husband.

Externally portrayed in the period between the gender-coperative time and the initial beginnnings of the formation of the state, is the solidarity of comrades mainly in the blood feud, a feud between several fellow males and their families. Thereby reigns the principle that any offence, even the slightest, will be bloodily avenged, and with the aid of blood-friends. The Papuans too are still at this stage of self-help. In a village near Simbang a case occurred recently where a woman caught stealing taro was speared to death on the spot by the vengeful injured party. Of course the death of the wife required atonement, and had to be avenged by blood or payment of blood money. Such a breach of the peace in the interior is usually the beginning of a state of war and a lot of blood-letting.

More immediate causes of feuds are sorcery and, like everywhere, women. If, for example, an eminent person in a village dies as the result of an accident or following an illness, according to the Papuan psyche he was bewitched, and his death has to be avenged. If the chief of the village where the enchanter lives does not step in as a mediator, and the feud is not quickly settled by payment of blood money, then the vendetta demands its sacrifice. Should the enchanter live in another village, then that village can expect a speedy attack on the part of the village where the other party was domiciled, [200] and the fellow villagers of the alleged sorcerer have to suffer with him. Peace is often brokered by the chief of the village where the sorcerer lives. The latter or his relatives, that is, his brothers and cousins, have to give gifts to the relatives of the deceased, that usually have to consist of boar's tusks or dog teeth. However, if the matter is settled without an earlier fight, by the payment of blood money, then above all the spirits must be mollified by outward signs that the murdered man is already avenged; otherwise they would give his family no rest, on account of a failure to avenge. Therefore it is customary that the payers of punitive damages to the recipients smear the recipients' foreheads with chalk.

An actual challenge to combat for the sake of the fight itself, is rare. If they are sure whether a neighbouring village harbours friendly or hostile sentiments, certain tribes in Kaiser-Wilhelmsland, such as the Yabim and Saleng, tend to send the village in question, via intermediaries of a friendly village, a spear broken in two with a bunch of croton on the tip. By this gesture they are symbolically asking whether it is war or peace; in the latter case the emissaries return with assurances of friendship; if the other village wants war, the envoys bring no response. The fight itself usually consist of secret, surprise attacks. If the village under threat has sufficient early warning, their inhabitants withdraw into the thickest jungle or flee to their tree houses, like the Kei people or, like other tribes, flee to their dwellings on the high cliffs. If it is already too late to retreat or to flee, they still have time to take up arms and settle down to defend themselves; a prolonged struggle flares up which is usually conducted only from ambushes. If some members of one party have fallen, the rest usually run away. Further pursuit is usually abandoned, and even a siege of an enemy village that is defending itself is uncommon in most cases; only on the Sattelberg and east of Pommern Bay do we find villages surrounded by pallisade fences as protection against their neighbours. Should the attack take place unexpectedly, usually everyone is butchered, to prevent anyone going for help. The victorious party then jubilantly returns home, where, as a rule [201] a dance concludes the expedition. For those killed in such a battle, revenge is undertaken by their friends.

There are still tribes in Kaiser-Wilhelmsland who exact their revenge to the point of eating the bodies of their slain enemies; among these are the Emboa people, the Poom people near Finschhafen, the Ago tribe between Blücher Point and Fortification Point, and the Bukana people. The Saleng and Yabim accuse each other of cannibalism, and among the former, from the authentic reports by the missionaries in Simbang, cannibalism still does occur today. According to the reports of Captain Dreger, Zöller and Kärnbach, among whom the last-named in particular was an accurate authority on the southeast of Kaiser-Wilhelmsland, cannibalism still occurs here and there on the Huon Gulf. When Miklukho-Maclay referred to the Erembi countryside south of Bunu on Cape Croisilles as cannibal-land, this information was based probably more on conjecture, and the fact that in the houses there he saw human skulls, which, however, the Papuans tended to preserve only as memorials of their dead. If cannibalism still does occur in our Protectorate, this vice happens only very sporadically in any case, and is in the process of dying out.

The tribes of the northernmost coastline of our Protectorate are warlike people who undertake annual campaigns to plunder the rich Berlin Harbour district, once the northwest monsoon enables the journey south. The Berlinhafen people themselves are not especially warlike, yet Ali Island in Berlinhafen was the scene of a minor battle that His Majesty's survey ship *Möwe* had to withstand with the natives in Spring 1897. Among the otherwise peaceful people of the Archipelago of Contented People and Astrolabe Bay, it has so far been only the Mies and the Gorima people who have caused minor friction occasionally with the Administration.

The Dampier Islanders too are warlike, and here and there elsewhere in Kaiser-Wilhelmsland there are populations that are contentious. Explorers such as Zöller, Lauterbach, Hollrung and Schrader among others, during their expeditions into the Finisterre Range and on the Ottilien and Augusta Rivers, have had to defend themselves at various times [202] against sneak attacks by the natives. The Saleng and the Yabim are in the continual grip of feuds with each other; the Simbang people again are hostile towards the neighbouring village of Gama; and beyond Constantinhafen, in the interior, there is continual foment among the Yabadi, Ingellam and Singu people. Then again, on Astrolabe Bay the Bongu and Koliku, and the Gorima and Bogadjim have a life of feuding. Finally, the natives on the little islands in the Herzog Lakes complain about the Bussi people on the Markham River who, in oft-repeated plundering raids, kill many of their people. To put a stop to these goings-on among the natives, and indeed to enhance the prestige of the administration, the Imperial administration would use a strong defence force. The small

handful of barely two dozen, totally-unreliable natives recruited from New Ireland, New Britain and the Solomon Islands, from where the so-called Kaiser-Wilhelmsland protective force has been recruited, have not been even remotely sufficient.

Frequently the weapons are simply ornaments. Very often you see beautiful plumed friendship spears in the villages; and on Bilibili there are palmwood swords that are probably more for decoration than for battle. The actual assault weapons are bow, arrows, spear and stone club. The last is rare. Full armament consists of spear, bow and arrows. If you encounter natives in their villages armed only with a spear then there is nothing to fear, but if they grip bows and arrows then you need to be alert. The mantraps occurring in British New Guinea are totally unknown among our Papuans. (This is also referred to in Chapter 8,3). By the decree of 13 January 1887, the pursuit of arms and ammunition is prohibited to the natives and, thanks to this regulation, firearms have also not come into their possession.

At Angriffshafen, besides the usual weapons we find richly-ornamented, rectangular wooden shields, about 1.10 metres long and 0.50 metres wide, fitted with a *tapa* grip and handle. The carvings represent human figures among other things. Also there, we find finely-worked cuirasses made from split rattan, held secure by a [203] binding over the shoulder, probably the only ones in Kaiser-Wilhelmsland. There, as on the Sechstroh River, we find very simple palmwood bows without any carving, but nicely decorated with wickerwork and strung with seed kernels. Arrows in this area are characterized by several black-painted rings on the shaft, and elaborately-carved serrations and barbs; they are approximately 1½ metres long. The tip is bamboo or bird bone or wood, and usually pierced in the middle. Bone tips commonly have wooden barbs embedded. Equally-long arrows are found among the natives of the village of Talgai on the Albrecht River, with a finely-plaited butt richly decorated with feathers and *Coix* seeds; sometimes they are also decorated with carvings and a type of wax. Here the bows are made from the wood of the betel palm; exquisite carving, fibre tassels and feathers provide decoration. Further eastward on Guap and on Dallman Harbour and beyond, the natives have heavy javelins, often 2.80 metres long, that sometimes taper into a finely-carved barb. Just as often, the tip is quite smooth. In the middle these spears have a backward-curved, short, spine, firmly bound on with bamboo fibre; this serves to hurl them by means of a throwing stick. In addition, bows and arrows serve as weapons. The bows are then made of betel palmwood, and the arrows of wood or bamboo with a smooth or a finely-carved tip. We find throwing-sticks similar to those on Dallman Harbour in the vicinity of the Augusta River at Cape della Torre. They differ from those described above only in so far as sometimes the wooden tip part is decorated in the middle by a mounted cassowary vertebra. Not uncommonly the lower part is decorated with cowries, hanks of hair and colourful twists.

A special weapon at Dallman Harbour is a flat, plate-like club, about a metre long, made from coconut palmwood with carving on the hand grip; this is also used in Astrolabe Bay. At Venus Point we again have throwing sticks, here displacing bows and arrows. On Hatsfeldt Harbour even boys go about armed. Here the throwing sticks are up to three metres long with a long tip of hardened palmwood, often decorated with small pieces of cuscus fur and feathers. Bows and arrows are also present. In order to make the rebound of the bowstring less painful, [204] the natives here, as in other parts of Kaiser-Wilhelmsland where bows and arrows are used, wear armbands of plaited rattan. On the Sechstroh River these consist of a strip and two conical discs. The weapons of the natives of the Archipelago of Contentment are very simple, and almost devoid of decoration. Here the Bilibili people have the best weapons; the worst are found on Segu and on Yabob Island. The javelins on Bilibili are usually two and a half to three metres long: heavy rods made of palmwood. A lancet-shaped bamboo tip is firmly bound on with finely-split rattan and, to conceal the joint, feathers and pieces of cuscus fur are mounted artistically. The Bogadji people use very heavy, long spears made from betel palm wood, although they also have lighter javelins of bamboo, 1.70 metres long; they call the former *galgull*. The bows are called *manembu*; they are

1.80 metres long, and made from palmwood, with a bowstring of rattan or Spanish cane. The Ragetta people have strong spears of palmwood with brightly-painted bamboo tips; they are also braided with red and yellow-dyed straw, and nicely decorated with feathers. The bows in the Archipelago of Contented People are the usual, about two metres long. They include barbed arrows. Finally, they also have a club made of heavy palmwood, about one and a half metres long, that has beautiful carving on the handle.

The shields that the natives have are usually a huge size, and too heavy as a means of defence in battle; however, on Bilibili they also have smaller shields, about half a metre in diameter. On Ragetta too there are smaller, round, wooden battle shields with fine, embossed carving and painting, much like those of Bilibili. The name given to these shields is *gubir*. In the Finschhafen area they have only huge shields that consist of a piece of wood with a concave curve, and rounded on its wide ends. These have a broad rim with a double grip for both arm and hand. Their length is one and a half metres and the width half a metre. Colourful painting, mostly representing human figures, is characteristic of them. The bows are up to two metres long, the arrows usually cane, and the spears are roughly fashioned. Their clubs are made from heavy wood, squared on both sides, and cut off at right angles on either end; they are usually painted red and black, and decorated with carving. Bows and arrows are missing on Huon Gulf; [205] as spears they have a simple, long, smoothed stick with a sharpened point, without any decoration or ornament. Offensive weapons appear to be totally absent on the Rüdiger River: dwelling there, are similarly-peaceful folk to those at Ragetta or Bilibili, undisturbed by neighbouring tribes that might disturb their peace, and without a care for the future.

Life among themselves in the Papuan village community usually flows smoothly, without disturbance. Fixed penalties for particular offences are unknown among them, for everyone helps himself as well as he can. And should a third party suffer an injustice, the sense of justice is far too blunted or too little developed to encourage intervention; indeed, an individual is often afraid of his adversary, fearing that he might take his revenge by sorcery, especially if the latter is powerful enough to confront the injustice suffered by him. Sorcery is always used as a last resort in self-help. Unfortunately, these manipulations in particular, behind the back of the enemy, reveal to us a hidden, deceitful trait in the character of our Papuans. Timid and suspicious by their very nature, they rarely show an open visor, and are always shy of a direct attack. When you meet them for the first time, they are almost always shy and hesitant, but soon become loudly clamorous and trusting when they no longer see any danger to themselves. Generally without initiative, without ambition, and yet self-serving, unreliable, acquisitive and vindictive in the extreme, the Papuan does not recommend himself to us at the first approach, and no way at all, at a glance. A mendacious nature and an addiction to exaggeration, cruelty and jealousy complete the character image of an average Papuan. Curiously, their great sense of superiority, shown on so many occasions towards Europeans, makes a more amusing impression. They stick firmly to the old-fashioned manner and the old ways, and, despite occasional admiration for European art and performance, they consider themselves so much more intelligent and smarter than the white people. Fortunately the black people in their doings are certainly not to be praised, because they lack satisfaction and, above all, mutual trust, which is probably shaken in most cases by their superstitious fear of being bewitched. This very superstition, so difficult to eradicate, this fear of spirits and bewitching, makes the Papuan often a less-congenial fellow in our eyes. On the other hand he does not lack [206] good qualities that could bring him closer to us; yet even these are not infrequently virtually devalued and suppressed by those same superstitions.

Why is the Papuan not so persevering as other folk at the same level of civilization? Because at some periods and on certain occasions, his superstition prohibits work. Why is he cowardly, suspicious, timid, and unreliable; why untruthful and insincere? Because his thoughts and deeds are so often influenced and misguided by fear of enchantment and bewitching. Were we

to succeed by honest effort in freeing him from the shackles of his superstition, we might soon present a different picture to that created above.

Quaint, especially for us Germans, is the great love and tenderness of the Papuans toward their children. Also, we admire their ability and, on the whole, their peaceful coexistence. Furthermore, we cannot just say that the Papuan shies away from work, as the criticism is often made. If you go past their gardens you would be pleased at the great care and perseverance with which they work, and the skill with which most plots have been set up. Faced with a particular task whose endpoint he can foresee, the Papuan will work more diligently than when he does not know how long it will drag out. If he has a specific goal in mind, and you talk to him in a friendly manner, he will persevere faithfully and diligently in the task. If he is asked at just the right time, in the right place, and is treated with patience and forebearance, he will repay this with diligence and joy in the work. He is neither willing nor accustomed to carrying out voluntary work: Nature offers him a rich abundance of everything that he needs for living, and even accommodates him here and there in the need for items that he does not have. And so the whites should be smart enough not to rush too eagerly to satisfy his desires, to acknowledge briskly his wishes and cravings, and to find out carefully for him, new needs.

For all his faults and bad qualities the Papuan is nothing more than a harmless child of Nature who requires corresponding treatment and, instead of throwing out the baby with the bathwater and saying: “Nothing can be initiated with these [207] people” we should try to understand them better, reckon with their faults, and not leave their positives out of consideration.

However, the natives are not all, as the saying goes, to be tarred with the same brush in their treatment. Some, for example the people of the upper Augusta River, the lower Ramu, Hatzfeldhafen, and on Franklin Bay, are to be handled with care; they are not to be trusted in any way, even if at first they greet the newcomer in a friendly manner and invite him to stay. Likewise, the Segu and Siar islanders in the Archipelago of Contented People are people who can literally not be trifled with. It has happened more than once on Siar that a harmless remark or a joke by a European has been interpreted so badly by the natives that they immediately reached for their bows, and only rapid and vigorous intervention by their countrymen prevented an indiscriminate volley of arrows. Every visitor to the island of Sek is seriously disadvantaged by the peevish-sensitive nature of the residents, against whose malice and sneaky ways they cannot be warned enough. On the other hand, the Ragetta islanders are very sober, peaceable and good people; like the Bilibili natives they are somewhat graciously shy in their manner. The Beliao and Götz islanders were friendly, like them; for various reasons both islands have recently been abandoned by their inhabitants. Amiable and generally accommodating, are the natives of Berlin and Dallmann harbours and Krauel Bay in the north; equally trusting on Alexishafen, especially in the village of Wollenbick, the upper Ramu, further to the south-east the Tami islanders, and finally the natives on Adolphhafen, Bayern Bay and at Parsee Point. So many natives from here have been recruited as labourers for the New Guinea Company. Finally, due to their character and habits, the Namala people, the Papuans of the Huon Gulf, are very likeable. With their dark-brown skin shade, their beautiful dark eyes, their aquiline nose, and their fine physique, they are extraordinarily captivating to us. The approach the stranger in a friendly, trusting manner, and it can be seen in their nice, open eyes that cunning and falsehood are far removed from them. They are peaceable even among themselves.

As long as we still lack a medium of communication [208] that makes it possible for us to penetrate further into the spirit and essence of the natives, like the Dutch with their coastal Malay and the English with their pidgin English and Motu dialect, we will move forward only slowly, step by step, in our efforts to encourage and educate them. And yet if a person has the opportunity of learning the natives’ language on the spot and learning about the natives themselves, then this opportunity is being used effectively, and finally many small things amount to a lot and, with the

combined forces, the goal is reached much more quickly. Unfortunately, language fragmentation among the Papuans in the Protectorate is indeed a counterpart of their political incoherence. Many reasons have led to the nurture and promotion of this fragmentation: above all the mutual fear the inhabitants of each village community and tribe have of each other; their reluctance to enter into closer mutual contact; their habit of adopting new names for objects and allowing the previous name to be changed or to drop off completely, etc.

In very many dialects of our Papuans we find traces of the Malay and Polynesian, especially in the coastal districts. For example, the Bogadji dialect on Astrolabe Bay very markedly favours Malay-Polynesian but is, in turn, quite different from the language of the Bilibili or Gorima people. According to Zöller's findings, roughly 6 – 25% of dialects are related to Malay or Polynesian; in any case more with the idiom of the former than of the latter. All the Papuan dialects are similar in that they are deficient in terminology for abstract items, yet on the other hand they abound in expressions for concrete objects. For example, the Yabim have different words for the purchase or trade of a woman, a pig, or a garment, but lack a general word for purchase or exchange. Almost all Papuan tribes have an immense number of words for designating the various varieties of banana, but the general name for 'banana' disappears among the multitude of individual names.

More closely related among them are the Yabim, Tami, Bukana, Poom and Kai languages. However Yabim and Kai differ from one another as much as, for example, French and Spanish. As mentioned already, the Papuans are highly susceptible to the adoption of new words and changing the originals. On Astrolabe Bay there are not a few expressions that have found their way into Papuan from Russian since Miklukho-Maclay's visit, [209] and in other parts of the territory we find chunks of English and German that substitute non-existent Papuan expressions or replace those already there. The odd dialect has also expanded further in Kaiser Wilhelmsland: thus the Yabim dialect is spoken roughly thirty miles from the Yabim lands, and that tells us a lot if we consider that the average extent of a language area is only about eight to ten kilometres, so that in individual neighbourhoods, for example between Cape Juno and Cape Croisilles, almost every village has a different language. The Tsimbim dialect of Hatzeldt Harbour can be found up to twenty kilometres round about. Also, the two main dialects of the Dampier people, the Kawelo and Waskia languages, have covered a fairly wide area: the former being spoken along the entire coast between Prince Adalbert and Grand Duke Alexis harbours, while the Waskia idiom is familiar to the coastal population to the north as far as the village of Talgai. In the Archipelago of Contented People the dialect of the Siar people is different from that of the Ragetta people, which is again different from that of the Yabob people, who, in turn, are barely able to communicate with the Bilibili islanders about five kilometres southeast. And further north, on the five hundred hectare island of Tamara in Berlinhafen, five different dialects are spoken in five different villages, while on the other three islands in the same harbour they use dialects that differ from the Tamara dialect.

The counting system of the Papuans of Kaiser-Wilhelmsland is just as primitive as the rest. They virtually all have only the five-number system. For example, the Siar people count *taimon*, *asu*, *tol*, *pal*, *lemak*; the Kaikar natives *kasek*, *uwaru*, *utol*, *iwawo*, *banin*; the Rook islanders *bs*, *ru*, *tol*, *ping*, *lun*; ten with them is *sangul*. The natives of Kaiser-Wilhelmsland do not yet appear to have a written language at their disposal. This appears surprising, given their skill in producing pleasing carvings.

Since the missionaries have turned to language research in the various districts right from the outset, the new imperial administration in the Protectorate will also do their part in collecting native dialects, particularly in the vicinity of the stations. And so, it is to be hoped that an ever-increasing amount of material will be accumulated in this area as well. What is available [210] so far in this area is a dictionary and grammar of the Siar and Bogadim language, a vocabulary of the

natives in the area of Finschhafen, Samoa Harbour, Hatzfeldthafen, the Simbang and Tami people, and finally Dr Schrader's collection of various Papuan languages.

Thanks to their extensive trading, individual natives of the larger trading centres, such as Tami, Bilibili, Siar, Talgai etc., speak three or four dialects. Therefore their language skills can best be exploited as interpreters at tribal assemblies and larger gatherings, circumcision ceremonies and other major festivities. During such major festivals where representatives of the most widely different tribes gather, common understanding among the population-groups flocking together from all sides could not take place without such interpreters.

Of all the major festival events, probably the most important is the oft-mentioned circumcision festival. Among the Yabim it is called *balum*; on Ragetta *marsap*; in Bogadjim *assa*; and in Bongu *mul*. The Papuan celebrates whenever and whatever he can: especially the end of cropping and the beginning of harvest, and bright moonlit nights never go by in Kaiser-Wilhelmsland without singing and dancing. Individual tribes also have their special dances. The mimicry dances of the Yabim are interesting. They perform dances in which they describe how the cassowary steps about majestically; how the heron and the pigeons feed their young; and how a big bird pursues a little bird. The women also take part in these. To make the presentation clearer to the audience they attach a feather similar to the tail feathers of a large bird to the back of their bast-fibre skirts. The movements of the women are extremely graceful, and the display is truly captivating. The Yabim men for their part perform like a wallaby hunted by dogs; like a dog chasing a bitch; like a man hunting flying foxes; and like a rooster circling round a hen. The men give such a masterful display in imitating the animals in the dance and mime how they pursue, tease, and fly that it is a pleasure to watch. On Tami the natives perform similar dances (Schellong, 1889). A man [211] holding a big stick in his hand moves forward by jumping while clamping the stick between the first and second toes of the right and left foot alternately; he is pursued by another Papuan performing identical movements. The Papuans of Finschhafen are distinguished from the others by their particular dexterity and consummate grace. The natives of Hatzfeldthafen and Friedrich Wilhelmshafen dance less gracefully, and they are also less lively than those of Finschhafen.

Dance movements in general consist of a forward and backward bending of the upper body, which they also turn to the right and to the left; a forward nod of the head; knee-bends; and every now and then a jump sideways. The women often dance in a circle, intertwining their outstretched arms and turning their knees inwards then outwards while singing in a monotone. Sometimes they dance in pairs, stepping in rows one behind the other, gracefully placing one foot in front of the other while following the beat. They often form a circle; a leader dances outside it, springing back and forth in time to the beat. The women are decorated with flattering foliage bustles and little embroidered pouches, and also with tufts of grass and flowers. Their faces and legs are painted in bright colours. Here and there the men have prepared masks as dance ornamentation; at Finschhafen tower-like finery of white and coloured cockatoo feathers, quills and small fruit seeds; at Hatzfeldthafen finery of woven cowry shell, resembling the visor of a helmet; in the Archipelago of Contented People a tapering mask addition. For dancing, others adorn themselves with feathers, which they fasten onto a hood-like cap on their head, or stick individually into their hair. Ferns and grasses are also very popular as dance jewellery.

The men's dances usually begin with a solemn march in pairs. Those no longer able to dance and the women, who seldom participate in the dance, are grouped all around. Children run busily back and forth and stoke the fire or swing cheery torches when the dance takes place in the evening. Suddenly the drum sounds and, as though electrified by the familiar sound, movement occurs in the dark rows and the dance begins in the manner described above, with or without [212] a solo dancer. The end of each round dance is usually signalled by a short cry from the participants.

The beautiful, seldom-performed round dances are very attractive. In their composition and execution they are reminiscent of those performed in our gymnastic schools. The dancers stand in pairs one behind the other in two long rows, until at a particular sound from the drum, one member of the pair turns off to the right, the other to the left to attach themselves to the end of the row and slip through the gap formed by the other pairs to put a foot firmly in the middle at the end of the rows. Then the second pair follows and this continues until a new series has been formed. Musical accompanied is varied: the most prevalent and popular are the wooden hourglass drums, two to three feet long, with one end open while the other is covered with the skin of an iguana or lizard. There is a handle in the middle of the drum. Drums like this are found especially on Dalmannhafen and around Hatzfeldthafen and Finschhafen; while on Astrolabe Bay, the Augusta and Ottilien Rivers usually large, hollowed blocks serve as drums. These have an elongated, oval, trough-like shape, and are quite purely tuned for the keynote, third, fifth, or octave; often they display carvings representing mainly birds and crocodiles. The rhythm is strictly maintained by the drummers; they have a great number of rhythms, especially among the natives of the Finschhafen area. The drums give out a dull tone, which is audible over a great distance, and thus also serve among the natives as signals of important events, from village to village. As a musical instrument west of Cape della Torre the natives have a piece of bamboo with a slot-shaped opening that is struck with a stick. They use a similar instrument to accompany their singing: a tongue, which is produced by lengthwise splitting of the tube, vibrates within a pointed, finger-wide piece of bamboo tube. A thread found at the end of the instrument is then plucked back and forth while this side is firmly clamped between the teeth. This causes vibrations, and by adjustment of the tongue, lips, and palate a variety of tones are produced. Another musical instrument of the Papuans, which, however, is not used in their [213] dances, but only during the circumcision ceremonies, has become familiar to us as the *balum* flutes and staves. The triton shell also serves as a musical instrument. You blow into a round hole cut out of the shell, and produce a sound reminiscent of a steam whistle. On Astrolabe Bay at Konstantinhafen the natives have a harmonica called *munki*, made from a coconut.

The vocals are kept mainly in falsetto, in its simplest form a buzzing without words or rhythm; usually it is only an accompaniment of the dances. However, in the Finschhafen area there are melodies arranged around various rhythms. Schellong (*loc. cit.*) has assembled several Papuan melodies that are highly characteristic. Certain melodies may be intoned only by the chiefs; these are called *tussumite* in the Finschhafen area, while the ordinary songs are called *bom-bom*. The melody that is sung as a dirge is called *taniboa* (*ibid.*); the celebratory dance melodies *gnssabi suhi*; the song before the men assemble for the dance is called *gnassalling*; the song that commences the dance is designated *nangssenagissun*; and the actual flute dance tune *nangebum* (Schellong *loc.cit.*, p.81 *et seq.*). On the Rüdiger River lives a group that appears to love singing very much. As the discoverer of this river reported, a crowd of cheerful Papuans greeted him on his journey upstream, deviating from the usual chanting song of the natives by singing a powerful song with great gusto. Finally, during his expedition into the Finisterre Range Zöller had the rare pleasure of listening to a flute concert performed by several men on bamboo flutes.

Apart from their hunting and fishing sports, their dancing and singing, the Papuans in our protectorate have no special pleasures and amusements. The inhabitants of the Sattelberg provide themselves with a more childlike pleasure by using a type of swing. This consists of strong rattan ropes, ten to twelve metres long, which are fastened to the branch of a tall tree. A sling is attached beneath. The person who wants to swing, steps into it. To gain momentum they may drop from a scaffold mounted there. [214]

4. Land cultivation

As the incidence of casuarinas in Kaiser-Wilhelmsland tends to indicate lack of cultivation and tillage, usually from afar, coconut palms are always sure signs of settlements and gardens in the vicinity. Since the Papuans rarely grow more than their immediate needs, their gardens are usually of limited extent. Larger plots can be found on the mountain slopes: the Hansemann Mountains, the Szigaun Plateau, on the mountain slopes inland from Konstantinhafen, e.g. in Buramana. After all, the natives require a relatively large area of land for their gardens, as they always replant the same spot only once. The inhabitants of the small islands are usually constrained, owing to space limitations, to lay out their gardens on the mainland. The laying-out of a field, that is changed every year, is done communally, as we have seen above. Previously they often, the Yabim regularly, brought the spirits a sacrifice, so that they would not interfere with the growth and thriving of the garden; then a good location was sought on the communal land. Each person has his particular plot, which his fellow villagers help him to clear and fence. The fence usually consists of sugar cane; the fence staves often sprout anew, sufficiently so to impart great strength to the whole. There is no actual door or gate in the fence although there are probably convenient places for getting through. The fences are necessary for protection against wild pigs, which would not allow unfenced gardens to spring up.

Clearing and hoeing of the soil, like putting up the fence, is almost exclusively men's work; then begins the work of the women, who have to sieve the earth and bed-in the plants; the latter is usually done in perfect order. Thus the tendrils of the yams are in rows, and the individual seedlings are wound round equally-spaced sticks.

On the Augusta River the gardens are up to a rood [quarter of an acre] in area. Woodland is seldom used there, but usually ground occupied by wild sugarcane. The number [215] of gardens is very great. The natives have excellent gardens in the countryside between Ama and Gabarun near Cape Croisilles; there they are mostly of considerable extent. In mountain areas, where the narrow ridges do not offer sufficient room for the gardens, they are often laid out on such steep slopes that development would not be contemplated by Europeans. Most commonly found in the gardens are taro, yams, bananas and sugarcane, more rarely tobacco.

Taro is cultivated in the period between March and August; then follows the yam season, which flourishes in November. As far as we know, corn is grown only by the natives at Venus Point; it is found introduced, like that on the south coast. Tobacco is cultivated in conjunction with yams. They also cultivate a type of small bean, sugarcane, gourds, a species of cucumber, and a species of goosefoot (*Chenopodium album*). The last-mentioned plants are all raised in gardens. Goosefoot is eaten as a vegetable, and is also used by the natives as a laxative.

Tobacco is undoubtedly an indigenous plant of New Guinea. It is also cultivated in gardens near the houses, particularly on the northeast coast. It is initially raised in seedbeds; then when the seedlings are about 20 cm high they are planted out 50 cm apart, and sometimes even heaped up. When the plant begins to flourish the leaves are gradually plucked, and lined up on thin rattan sticks. No tobacco is cultivated on Adolphhafen, but on the other hand a lot on the Augusta River, Dallmannhafen, and in other locations. In coils, Papuan tobacco forms part of the natives' barter. The leaves, dried in the sun or by the fire, are smoked in the form of a cigarette. A banana leaf or, more commonly, a tree leaf serves as a wrapping. Fire must always been on hand with the Papuan's type of cigarette, because otherwise it often happens that he "smokes cold" since the cigarettes rolled in such a manner smoulder very badly.

As for other stimulants, betel is generally known. The roughly walnut-sized yellow or green fruit of the betel palm ripen in bunches. The Papuans first remove the fibrous shell of the fruit and enjoy the inner core with the addition of powdered lime, which they obtain from burnt coral. The refreshing after-taste is the best thing about betel. The taste itself is pungent and sour

and pulls the [216] gums together, similar to alum; furthermore it has the unpleasant effect that with extended use it colours the gums and tongue red and the teeth almost black.

The main food is sago and the coconut. The preparation of sago, which is not to be confused with our sago globules, is done in the following manner: after the tree has been felled and the pulp removed from its stem, the pulp is first cleaned of the many fibres that pervade it, and sieved. The natives use the ribs of the base part of a palm leaf as a sieve. The sago pulp is laid on this sieve and water is frequently poured over it. This results in a whitish, flour-like, firmly-caked mass, which is wrapped in banana leaves. The round lumps of sago, often weighing ten pounds, are then hung up to dry before being baked in cake form. On the Augusta River where the natives' gardens are situated usually in the immediate vicinity of the river, as on the Ottilien River, they cultivate a lot of sago.

The Hansa Bay region is distinguished by the great abundance of stands of coconut palm, as is the coastal stretch between Berlinhafen and Dallmannhafen and beyond. Further copra areas are the Bertrand, Matty and Purdy islands. On the latter, not infrequently native subjects of the Dutch protectorate, tend to land and stay for a long time, exploiting the local rich stands of coconut to obtain the oil, which they collect in large rubber flasks and take home, for distribution. The people of our own protectorate have not yet concerned themselves with obtaining copra, and only seldom have the Europeans had the opportunity of providing a helping hand so far. Nor do they plant any nuts, unfortunately; they just understand their consumption. After they have removed the green outer shell with a sharp object, they tear down the firm bast fibre with their teeth, then bore a hole in the hard shell and slurp the refreshing wetness with relish, especially on their long marches. The rest of the tasty contents serve as food.

Another plant, the kava (*Piper methysticum* Forster), (Finsch, 1888:61) requires preparation by our natives to become a dish that is very popular with them, although it is not satisfying to our [217] taste. They chew the leaves, roots, and branches of the kava, and the salivary juice produced is spat, to ferment in a vessel containing a yam sauce. The women have the good fortune to be spared from taking part in the enjoyment of this dish. Kava is said to be a warming drink that drives out sweat. Kava plants were found by Dr Hollrung in the Kai village of Meming at Butaweng, in the vicinity of the Bubui.

Several foreign fruits were brought by Maclay to Astrolabe Bay, particularly the papaya. It now grows virtually everywhere in Kaiser-Wilhelmsland. Papaya is a melon-like fruit with a delightfully sweet taste, reminiscent of the sugar-melon and apricot. In many places pandanus fruit is enjoyed by the native population; they eat the lower, soft, sweet-tasting half. The natives near Konstantinhafen also quite like the root of *Curcuma longa* Linnaeus, which is traded elsewhere as a colouring agent; and also the ginger root, which they sometimes eat together with the fruit of the wild fig. Generally popular as a fruit are bananas; in the Protectorate they occur in an extraordinarily great number of varieties, for which all the natives have their own name. Less popular is the fruit of the frequently-occurring breadfruit tree. Its wood is used a lot by the natives on Hatzfeldthafen for building canoes, as it is light and, at the same time, resistant. There, as in Konstantinhafen, the fruits of some fig trees provide a great delicacy for the natives, and in the vicinity of Finschhafen they prepare the oft-mentioned *obos* from the bark of a fig tree that has been soaked in water. The bark fibres of the *Pipturus* shrub on the other hand are used to produce their ropes and nets.

There is also a whole series of other trees and shrubs that the natives use; for example, they need the shoots of bamboo species for producing walls of houses, garden fences, and rafters; from the fragrant herb *Ocimum sanctum* Linn. they obtain a fragrance, which by kneading the plants together with a resin, they transfer to the resin. As a resin, they tend to use the yellowish-green substance flowing out of the stem of *Calophyllum inophillum* Linn., which at the same time they use in the production of [218] torches. The natives owe yet another dye, in addition to those

mentioned above, to the bark of *Bruguiera gymnorhiza* Blume and *Rhizophora* species, and the red glands of *Mallotus philippensis* Mueller Argoviensis. The latter occurs everywhere in abandoned gardens. A wild species of citrus possesses an excellent oil inside their skins, that the natives on the Empress Augusta River, where the tree is often found, treasure highly. For purifying the blood, the natives use the fruit of *Averrhoa bilimbi*, which tastes like sorrel. For stuffing the skins of birds they often use the wool of *Bombax malabaricum*. The Bongu, Gumbu- and Korrendu people prepare their fibre material from a species of hibiscus; the natives of Finschhafen use *Abroma mollis*. Likewise, ropes are often manufactured from the bast fibre of *Kleinhovia hospita* Linn.; the tree is very similar to our linden. A bean-like creeper, *Pueraria novo-guinensis* Warburg, supplies the natives with the material for making their carrying pouches. Timber used also for canoe-building, besides those already mentioned, is provided by the trunk of *Stephegyne parvifolia* Korth (common on the Augusta River), and also the wood of *Heritiera littoralis* Dryand. The fruits of *Jambosa aquaea* Rumph., the so-called East Indian rose apples, are thirst-quenching; and, finally, the berries of the bush *Rubus mollucanus* Linn. Very happily eaten by the natives are the very pleasant-tasting pear-sized fruits of *Bassia hollrungii* K.Schum; and, especially by the natives in the vicinity of Finschhafen, where they are more common than elsewhere in Kaiser-Wilhelmsland, the wild mango, which is slightly more fibrous than the real mango. For nuts, they have the almond-tasting seeds of *Terminalia iatappa* Linn., and *Terminalia kaernbachii* Warburg, which is common around Finschhafen.

We find edible earth at various sites in the protectorate, such as Dallmannhafen, Angriffs-Hafen, and Venus Point. The natives prepare them in the form of flat cakes about 20 cm wide. They look like brownish-grey clay and, according to Senator Trier, they consist of magnesia, iron oxide-alumina-silica, some lime and phosphoric acid. However, among the Papuans edible earth is regarded only as a stimulant.

Animals as food come only second among the natives. In the first place, they are vegetarians. The greatest tidbit in Kaiser-Wilhelmsland, like everywhere else in New Guinea [219] is the pig, whether domestic or wild, and the dog; furthermore, and especially favoured in areas near the water, the cassowary and the crocodile; they also eat the flesh of tree kangaroos; iguanas; turtles; fish; dugongs; chicken; and the flying fox whose flesh, according to the Papuans, is quite palatable. Pork is enjoyed in the boiled, roasted, and smoked states. To smoke it, they cut it into very small pieces, which are pressed firmly together before smoking; they also smoke fish, and in a very special way on the Thorspecken River: they pull it on a strong string in a spiral manner in such a way that its mouth touches the tail fin.

For domestic pets in Kaiser-Wilhelmsland we find only the pig and the dog, a cat here and there, and the chicken. The main meal in Papua is taken in the late afternoon. They also take a snack in the morning, but it is uncooked. The meal is prepared by the women as a rule, when they return at four o'clock in the afternoon from their work in the gardens. Firstly they clean the pots with banana leaves, cut up wood by chopping the dry branches with stones, make a fire (usually in front of the hut), and put water on to boil, where the little girls deftly lend a hand. Our potatoes and vegetables are substituted by the tubers of yams, taro and sweet potatoes. Boiled or roasted yams, and slices of taro or breadfruit are frequent dishes. Instead of butter or fat they use the oil content of the coconut. Seawater, or a vegetable ash that they obtain from charred roots soaked in seawater, replaces salt. On Astrolabe Bay such saltwater-soaked wood is very popular. Within this bay, at the Sziganu massif, Lauterbach on his march to the Ramu River discovered a salt source near a little stream, that had been enclosed by the natives and was frequently used. Our imported salt is very popular among the Papuans as a delicacy. As a food ingredient they like to use the inner core of the coconut, that tastes pleasantly like almonds.

When the women have a cooked dish ready, they set it in a pot over the fire. The vessel is covered with a large leaf and protected from falling over [220] or being tipped over by the pigs, by

several stones. The men can usually cook as well as the women, but they prefer to supervise and go into action only after preparation of the meal, as a distributor and a destroyer; they take into their own hands only the preparation of animal food. Plates are unknown, they are replaced by big banana leaves. Each person receives one from the distributor, with his portion meted out, be it by the head of the family or the most respected member of the clan, and it gives a comfortable feeling to the innocent bystander when he sees how the distributor, with graceful earnestness goes around the circle giving each person his portion and yet finds the time to chat with him and enjoy a joke, usually gesticulating violently. He does not use a spoon for serving but uses his hand instead.

Usually the men and older boys sit together in a row. The women, girls and small children sit opposite them in a semicircle; they always eat separately from the men. Among the Yabim the bigger boys not uncommonly eat their portions in the meeting house, where they also sleep. If the Papuans are surprised at their mealtime by the arrival of a stranger who is not totally unknown to them, he is usually amicably invited to share the meal. He must sit down on a hastily-prepared banana leaf and receives his portion like the others. The menu is varied, according to the season and the significance of the day. In the very-frequent feasts everything is more plentiful: usually roast pork, but at least roast dog. Not uncommonly they use the teeth of a hair-comb as forks, which generally happens on Astrolabe Bay, although usually they eat with their hands. A popular dish is sago dumplings, boiled shellfish and fish, which, especially when they are small, are roasted and eaten without being gutted. The bill of fare of our protectorate natives in New Guinea is not very filling, because, as we have said, they produce only what they need to live on.

As for Europeans in Kaiser-Wilhelmsland, apart from the missionaries the New Guinea Company is the sole producer, for the settlement of the late merchant Kärnbach at Berlinhafen was transferred to the New Guinea Company in 1897. [221]

And how rich Kaiser-Wilhelmsland is in arable land of productive capacity! On the Rook Islands there are great lowlands suitable for agriculture and on the mainland, particularly on the coast, a flat foreshore highly suitable for agricultural purposes, and also on the river flats, broad, fertile stretches, admittedly still to be cleared. Before all other regions, the Brandenburg coast from Cape Lapar as far as the Albrecht River, the area round Guido Cora Point, Dallmannhafen, then, further south, the rich hinterland between the mouth of the Ama River and Cape Croisilles is admirably suited for plantations. Also, the land that is bordered by the foothills of the Hansemann Mountains, the northern shore of Grand Duke Alexishafen, and the sea coast should be considered as good agricultural land. Furthermore, the entire coast between Cape King William and Astrolabe Bay has large areas of the best soil that appears highly suitable for all tropical crops, particularly the cultivation of coffee and cocoa; the slopes covered in bush and grassland near the village of Dschongumana have long been kept in mind by the New Guinea Company, for a coffee plantation. Also, the lower slopes of the Hansemann Mountains with their deep, humus-rich soil would be good for coffee; they are now covered alternately with bush, grass and sugarcane.

Further south of Cape Rigny, where the landscape has an almost entirely European character, extensive slopes covered with *alang-alang* offer good pasture. The river flat of the Kabenau in its western part, near the mouth makes a very fruitful impression, as does the grassy and wooded valley floor of the Bupollum River on the south side of Fortification Point. A little further north-west, about two nautical miles from Kelana Point, at the mouth of the small local river, a plain appears to expand; its continuation, the low-lying grassy plain beginning further north, beyond Gneisenau Point, should be considered. Finally, the terraces already mentioned several times, with their extensive *alang-alang* flats, would be excellent for raising cattle but also for agricultural purposes.

The excellent tobacco harvest that Stephansort has enjoyed for several years in a row, has been affected in the last two years by adverse climatic conditions. This has led the administration to restrict tobacco cultivation [222] to the plantation at Stephansort, and of the 400 fields to be

cultivated over the year, to lay out a further 100 at Jomba at the same time, and to lay out an experimental plantation and a botanical garden. (Development of the Jomba plantation has recently got under way). The 1896 tobacco harvest produced 606 bales, of which, after subtracting all the samples etc., 93,629 pounds were sold at a good price. Quality and burning were both praised as perfection. The 1897 harvest of 79,300 pounds also went on the market and likewise paid well.

Besides the cultivation of tobacco, once it had been harvested at Stephansort, cotton was grown on the land quite successfully. Now there are 250 hectares of cotton under cultivation, together with coconut palms, kapok, and some food crops. The coconut palm stock is 34,500 trees in Stephansort, of which, however, only 50 are viable. Erima Harbour already carries 191 coconuts; the stand amounts to around 2,500 trees; in Konstantinhafen there are 6,000 trees in all, of which 2,677 are perennial; and Seleo has 5,500 trees. Friedrich-Wilhelmshafen has 9,760 coconut palms and Jomba 2,000. Preparations have been made to plant-out the land between Friedrich-Wilhelmshafen and Jomba with 40–50,000 palms. Kapok is used as cushion material and is worth up to 60 Pfennig a pound on the market. All paths in Stephansort are planted with kapok trees.

As for food crops, experiments have been undertaken with rice and corn; thirty hectares of the latter are already under cultivation. At the experimental station the Liberia plantation with 30,000 trees has so far not lived up to expectations since many have withered; on the other hand the rubber and cassia trees are developing well; pepper and cocoa have also been planted experimentally in recent times. Various rubber-producing plants have also been raised in beds.

Experiments with crops have shown that beans, peas, and especially tomatoes, kohlrabi, red radishes, endives, pumpkins, melons, and black radishes progress well. Already one thousand specimens of various crops and useful trees have been set out; all are thriving. including shade plants, oil palms and refined bamboo species. [223]

Various refined timbers, including *Calophyllum inophyllum*, *Afzelia bijuga*, *Cordia subcordata* and *Malava*, have delivered an export article since the establishment of the Protectorate. By virtue of their strength, their durability, and their beautiful appearance they are suitable for carpentry, indoor furniture, and sculpture work. Particularly in recent times the timber has found such a market sale that the latest consignments from the Protectorate were already sold before unloading.

In the vicinity of the former station of Butaweng grows the useful *Alstonia* tree, whose bark, as *dita* bark, is on the market, particularly in the Philippines and Java, as a fever remedy. In the coastal forest between Gabaron and Ama in the vicinity of Cape Croisilles, besides *Calophyllum* wood, we also find *Sidrophyllum*-, *Heritiera*- and *Malava* wood, which all come into consideration as timber; the last-mentioned is found also in the Finschhafen area.

5. Trade and transport

Even if we cannot say that there is a regulated trade among the natives of Kaiser-Wilhelmsland, the beginnings of one is starting to appear. Thus the Bilibili people break off their trading voyages to Rook Island and Finschhafen, with the onset of the northwest monsoon, and stay there until the incoming south-east tradewind allows their return journey. The Rook islanders, their main friends, sometimes go back with them, to carry out their own basketry again in the Archipelago of Contentment. They then spend a season with the hospitable Bilibili people. The aspiring Bilibili islanders are, at least in the Archipelago of Contented People, almost the only ones, of all island inhabitants who have the privilege of entering directly into trading relations with the mountain dwellers; this happens almost solely through the mediation of coastal populations. The latter are so

heavily imbued with their inherited privilege of mediating outside trade with the mountain-dwellers, that they will grasp at the most reprehensible means in order to obtain this privilege.

Thus the Kai legend was dished-up to the first settlers on Finschhafen [224] by the local coastal people. The settlers were expressly warned about the Kai people, who were portrayed as cannibals and accused of other atrocities. Why did this happen? Only to prevent the Europeans from going to the Kai people with their trade goods. On the other hand, they were afraid of being deprived of their old commercial privilege. However, the influence of the Bilibili people is strong enough to break even those old privileges. For example, they are in a direct commercial relationship with the Yambana tribe in the interior of the Hansemann Mountain, and also with the Djidjuma people in the Örtzen Mountain and the Sziganu people on the Elisabeth River.

An emerging commercial people from further north are the Suruman-Matuka-Bunu people, with whom Bilibili is also in trading contact. Even the Tami people come to Bilibili with their carvings and turtleshell work, to trade for pottery. The Yap islanders with their strong merchant fleet dominate the heavily-populated Dallmann Strait and its surroundings. They prefer to distribute wooden masks, and small wooden figures, turtleshell armrings, and wooden bowls. Again Siar is in active trading with Bogadjim; but they also extend their trading voyages further south, as far as Cape King William and Teliata, to bring their sago and other products to the Manu. Remarkably, Karkar has no trading relationship at all with the inhabitants of the Archipelago of Contented People, although probably with the Malala people on Franklin Bay and other natives on the mainland.

As we can see, trade lies virtually in the hands of the island-dwellers, who fearlessly undertaken the longest voyages in their fragile vessels. Apparently the river residents come to the coast here and there in their canoes, at least the residents of the larger rivers such as the Ottilien and the Augusta Rivers. Thus Lauterbach, during his expedition along the middle Ramu, found seashells among the local natives — a sure sign of an existing trade between these and the coastal residents. In the southeast of Kaiser-Wilhelmsland the villages tucked away among the Herzog lakes are in a trading relationship with other tribes to get rid of the oversupply of fish that their teeming lagoons provide for them. They sail their canoes as far as Cape Arkona and exchange garden produce against their fish.

Finally as active traders [225] mention must be made of the natives of the islands in Berlin- and Dallmannhafen, who bring masks, weapons, pottery and carvings to the trading market. As for the inhabitants of all the small New Guinea offshore islands, so too, probably, for the islanders in Berlinhafen and Dallmannhafen Need has been the educator and teacher. Principally, lack of space has prevented them from creating larger gardens on their island kingdom, and famine forced them to produce carvings and clay pottery, and trade them with the mainland residents in exchange for food. Then gradually they acquired a certain dominance in intellectual and business relations over their neighbours. Also, over time they may have learned a lot from the Malayan traders who frequented those areas long before the founding of our Protectorate in New Guinea and traded with the natives, but in recent times they have very gradually withdrawn, after they had come into conflict with the regulations.

As yet there is no common medium of exchange in the Protectorate. Finsch would have liked to have found a type of shell money in particular places, such as Dallmannhafen, Venus Point, and in the neighbourhood of the terrace country, and the same dog's teeth on a string in other places. However, he is not quite sure about this, and in any case the shell money here would not have the importance of such a general medium of exchange as the Diwarra money in the Bismarck Archipelago, without which they can no longer function in trading there.

In trade with the Europeans the natives' attention is turned more and more towards iron, even though there are many places in the interior and even on the coast, where iron is completely unknown, such as on the Kaprivi, Ramu, and Rüdiger rivers. There cannot be any talk of actual

trade between Europeans and natives in Kaiser-Wilhelmsland, and because of the slowness and frugality of the natives it will still be some time before it evolves. An even further reason why any significant trading between natives and whites in the protectorate cannot be talked of so far, may be found in the fact that right in the vicinity of the stations, apart perhaps from the settlements on Berlinhafen [226] and on the mission stations — the population is very sparse. Attempts have been made in Friedrich-Wilhelmshafen to establish so-called market days and to induce the natives to turn up at the station on those days with their trading products. They came probably one or other time but did not want to keep constantly to the set days for the market. The Papuan does not love compulsion, he comes when he is ready, or when his needs require; but then he wants to be greeted in a friendly manner. If he finds himself well accommodated then possibly he slowly settles in; but for now the natives have too few needs, and they come to market only when they are driven by the desire for tobacco, which will play the primary role as a medium of exchange for a long time yet. So far, trade and commerce hold very modest limits among the natives, as we have seen, and no Papuan has yet become prosperous through trading, in Kaiser-Wilhelmsland. The reasons lie in the cowardly trait of the people, which does not let them cross the boundaries of their tribal area for fear of being enchanted.

The movement of European goods is limited mainly to the New Guinea Company and the missions existing there. The value of imported goods (including goods imported to Herbertshöhe), which amounted to 787,167 Marks in 1893-94; has exceeded a million Marks in recent years. The quantity of tobacco exported in recent years: in 1892, 108,630 pounds; in 1893, 160,033 pounds; in 1894, 155,000 pounds; in 1895, 105,000 pounds; in 1896, 93,926 pounds; in 1897, 79,300 pounds; in 1898, as a result of severe drought, only about 61,000 pounds. Timber production, which in recent years had been limited to the *Afzelia bijuga* around Stephansort has recently been operating on a large scale again. From the first cotton produced at Stephansort, by the end of September 1898 approximately 20,000 kilograms of raw cotton have been brought in. Great expectations are cherished for the recent plantings of rubber trees, which, after experimentation, have produced a highly marketable product. On Seleo, copra extraction has already begun: from December 1897 till October 1898 82.5 tons [227] have been shipped from there, also pearl shell, trepang, turtle shell, and 3,027 pieces of Green-snail shells weighing 5,477 pounds. From the Seleo station, trading stations have been set up on on Bertrand Island, and also in Wokan and Lalliep, in Suwain, Arop Wallis, Forr, Dallmannhafen, Tarawai and Cham. In addition, a fishing station was recently set up on Angel Island.

Navigation along the coast offers no dangers or difficulties either for steamers or sailboats, since there are no reefs in the actual fairway. Nevertheless, when the New Guinea Company lost four ships in the last decade through strandings alone, it was because the ships quite often had to pass through areas that were still totally unknown and unsurveyed during voyages in the service of the administration. The Imperial postal steamer that had to sail along the coast of Kaiser-Wilhelmsland every eight weeks from the north, as far as Langemak Bay in the south, never met with any accident, nor had other foreign ships that visited the Protectorate and [228] stayed within the normal navigable waters. The many inconveniences and the vast distances brought about in the early years of the Protectorate by travel connection via Cookstown with the mailboats of the British India Line, and via Soerabaya with the Dutch *Stoomvaart-Maatschappij-Nedderland* have now been lifted. After the granting of an Imperial subsidy a regular eight-weekly service was established between the Protectorate and Singapore by *Norddeutscher Lloyd* subsequent to the East Asian lines. Initially this voyage was undertaken by the steamer *Lübeck*, but two years ago the *Stettin* (3,000 register tons) replaced her. The outbound route is Batavia, Macassar, Berlinhafen, Friedrich-Wilhelmshafen, Stephansort or Erima, Simbang (Langemak Bay), Herbertshöhe, and Matupi (the last two: stations in the Bismarck Archipelago); and the same places on the return voyage, with the exception of Simbang; also, when needed, Mioko, Amboina, and Ternate.

The steamer *Lübeck* of North German Lloyd in Friedrich-Wilhelmshafen (1895)

The shipping service within the Protectorate is operated by the company's own vessels; unfortunately, the brand-new steamer *Johann Albrecht*, built only last year, ran aground on its maiden voyage while attempting to go to the aid of shipwrecked traders from the firm Hernsheim & Co. The company's recruiting services are provided by the sailing schooners *Senta* and *Alexandra*. In the future it is planned to bring a joint-sail-and-steam vessel into service with the company. For expeditions into the interior, a small sternwheeler, *Herzogin Elisabeth*, 18.2 metres long, 3.9 metres wide, and 1 metre high, is currently in service. It was built by the Bremen firm Vulcan, in Vegesack, and is on the Ramu river at the moment. Up until now internal traffic within the Protectorate had been managed in such a way that a four-weekly connection had been maintained between Friedrich-Wilhelmshafen and the trading settlements in the east, and on the way the vessel put in to Stephansort or Erima, Simbang, and sometimes Berlinhafen; delivering the mail as well.

Letters and other postal items have been transferred to the East Asian line of North German Lloyd since 1893. Similarly, since 1 January 1894 parcels can also be exchanged between the Protectorate and Europe by the direct route [229] via Bremen. Also, between the Dutch [East] Indies and the Protectorate there has been an exchange of postal parcels for several years. Telegrams in the direction of Kaiser-Wilhelmsland can be sent to the mail steamer in Macassar, requiring only eight days from Europe, compared with twenty-two days via Singapore. In the direction from the Protectorate, messages via Macassar can be calculated from the date of

departure of the postal steamer from Kaiser-Wilhelmshafen, that is, eight days to Europe, whereas previously they had taken thirteen days via Soerabaya.

German and foreign warships are constantly putting in to the German protectorate.

6. Colonization

Now that we have got to know the Papuans of Kaiser-Wilhelmsland, their land, and their relations with the Europeans, we want to consider the gradual development of the region rather more closely, by means of historical retrospection. It may be anticipated that we have to be grateful only for the endurance of the New Guinea Company, who have done more with their limited resources than is usually recognized.

Let us first of all go back in memory to the time when the New Guinea Company began their exploration of the country fifteen years ago, after resuming their attempts, begun in 1880, to acquire land for German settlements in the Pacific.

In 1884, on the steamer *Samoa* acquired in Sydney, the company dispatched the researcher Dr Otto Finsch, already well-known from his New Guinea journeys, to the unfamiliar coasts of New Guinea to explore these and the coasts of New Britain and New Ireland in greater detail, and also to acquire land from the natives. Having received very favourable reports about his travels from Dr Finsch, and after some areas by Imperial order had been studied more closely under German protection by German warships, the undertaking of the New Guinea Company received Imperial [230] sanction through his letter of imperial protection signed on 17 May 1885.

This letter of protection gave the company the right to exercise countrywide public power under the suzerainty of His Majesty the Emperor, together with the exclusive right to take possession of land and have it at their disposal, and to conclude contracts with the natives involving agricultural and land entitlements. The Imperial Government reserved the Order of the administration of justice, as well as the control and management of relationships between the Protectorate and foreign governments. Meanwhile, at the behest of the Chancellor, an official notice was published in the Australian press by von Oertzen, the Imperial Commissioner in the South Seas, that without permission from the German authorities land acquisitions in the new territory would be invalid; on the other hand older vested rights would be protected. Furthermore, the decree prohibited the supply of weapons, ammunition, explosions, and spirituous liquor to the natives, and also imposed a ban on their being taken from the Protectorate as workers. The existing friction between our government and England concerning the mutual claims of the southeast coast of New Guinea found its final resolution in the Declaration of 6 April 1886, regarding the delimitation of German and English spheres of influence in the Pacific. Then on 10 April of the same year, agreement was reached and declared by the two governments on mutual trade and freedom of movement in the German and English protectorates in the western Pacific and, on 12 May 1886, the New Guinea Company, through the approved Statute of 29 March 1886, was given the rights of a legal entity. In this statute the Company expresses that they want to operate economic enterprises in the new territories only so far as this would be considered useful to the development of the company, or to stimulate and promote private enterprise.

After the first expedition outfitted by the New Guinea Company had departed their homeland on 29 July 1885 and, following a stint on Java, had dropped anchor in Finschhafen on Kaiser-Wilhelmsland on 5 November, a start was made, with the founding of the first station of the New Guinea Company on that same day. On 10 June of the [231] following year Vice-Admiral (retd.) Georg Baron von Schleinitz took up his post as the first Governor of New Guinea. He was charged with taking the first steps in the more detailed exploration of the interior of the country, and he has demonstrated that he has flourished in this task in an outstanding manner. The coastline

of Kaiser-Wilhelmsland was established for the most part by him personally, or by his orders and under his direction; the Huon Gulf was explored; the Augusta River was navigated upstream for 380 nautical miles; and smaller expeditions had been undertaken in the Gorima area in the Butaweng region, and the land between Cape Juno and Cape Croisilles. During his term of office subsidiary stations were established at Hatzfeldthafen, Konstantinhafen, Butaweng, and Kelana.

Under the successor of Herr von Schleinitz, the current director of the Imperial Post Office *Geheimer Oberpostrat* Krätke, a highly-efficient worker and excellent organizer, whose term of office was measured in a short period, the exploration of the country had been successfully continued. During that time Hugo Zöller undertook his expedition into the Finisterre Range; the surroundings of Hatzfeldthafen, the Simbang and Sattelberg countryside, and the interior beyond the company station were explored and investigated in greater detail.

On 30 April 1889 the statute of the New Guinea Company received, under Section §1, a restrictive supplement, that the exercise of sovereignty by the company should be carried out only insofar as this exercise would be applied, wholly or in part, by officials of the Reich, by virtue of a special agreement. This amendment provided for the event of an imminent assumption of state sovereignty over the Protectorate by the Empire. This did in fact happen, in November of the same year, with state administration being carried out by an imperial commissioner, with a registrar, secretary, and several local officials alongside. Their salaries had to be borne by the company. However, they retained the land and property privileges provided for them in the Imperial letter of protection, and the rest of the prerogatives secured for them through legislation. Furthermore, it was stipulated in the agreement that the laws and regulations that related to the administration of the Protectorate could be enacted only after consultation with the New Guinea Company and further, that the [232] convention could be terminated after two years, and should lapse one year after the date of termination. From 1 November 1889 to 1 September 1892, the senior civil servant, Privy-Councillor-of-the-Legation Rose, currently active as Consul General in Samoa, functioned as Imperial Commissioner up until the time of the dissolution of the contract.

An as yet still unexplained epidemic that wiped out thirteen officials including the doctor at the beginning of 1891, led to the Imperial Commissioner's abandoning this station permanently, for health reasons. In the spring of 1891 Stephansort on Astrolabe Bay was selected as the seat of government. There, in August 1888 a tobacco plantation had been established near the village of Bogadjim. From here, a year after resumption of land management by the New Guinea Company, the newly-appointed Governor Schmiele relocated the headquarters to a newly-established station on Friedrich-Wilhelmshafen. Schmiele had already been working tirelessly since 1886 as a magistrate and from 1889 to 1892 as the Imperial Chancellor in the Bismarck Archipelago and knew the land and people of the Protectorate like no other. Following the dismissal of the Imperial Governor, he therefore seemed the most likely to be called to head the administration of the Protectorate including, as we know, the Bismarck Archipelago and the German Solomon Islands. Under very difficult conditions, after a long journey to his honourable post, he took office on 1 September 1892, and throughout his time he set a shining example to all his subordinates with his rare dutifulness and enthusiasm for work. Stricken on the return journey home, death claimed him on 3 March 1895 in Batavia, due to malaria complicated by oedema.

Since then, the office of the highest representative in the Protectorate of the New Guinea Company has been successively managed, provisionally, by Corvette-Captain (ret.) Rüdiger, General Director Kurt von Hagen, and lawyer Skopnik. Rüdiger, who had already proven himself in East Africa as representative of the Governor of Sudan, made important contributions to the exploration of the land during his only short term, particularly in the south-east and in the north, and put a stop to the predatory and illegal activities of the [233] Malayan and Chinese merchants. In August 1896 health reasons forced him to abandon what had become a cherished posting. His successor, von Hagen, who had set himself large targets, and had already been busy since 1893 as

the chief administrator of Stephansort, died a hero's death while in pursuit of the prison escapee murderer of the explorer Ehlers.

The submission regarding the resumption of sovereignty by the empire, had been rejected in the Spring of 1896 by the Reichstag. Following renewed proposals from the Colonial Council, negotiations between the government and the New Guinea Company had been resumed in July 1898, and concluded in a treaty which was approved on 5 September by the signatories of the New Guinea Company and completed on 7 October by the Chancellor. The essential content of the contract was to the effect that the adoption by the empire should proceed, with payment of the sum of four million Marks to the New Guinea Company, against the company's land settlement of 50,000 hectares. Payment of this sum should however be facilitated and stipulated, by its spreading over ten non-interest-bearing annual instalments of 400,000 Marks, that the money would be used only for economic purposes in the interests of the Protectorate itself. The New Guinea Company in turn claimed on the part of the Empire the greatest possible assistance in worker recruitment and, under a special law, mineral exploitation in the Ramu River area; furthermore, the company should be entitled, within ten years, to take possession of a total area of 50,000 hectares of land free of charge, however with certain restrictions on its selection. In this form the agreement had arrived at the Federal Council and the Reichstag for ratification, with the estimates of income and expenditure that would accrue to the Empire from the take-over. On 8 March 1899 the Budget Commission of the Reichstag gave its agreement with the proviso that the right of selection by the company be restricted to Kaiser-Wilhelmsland alone, and for a period of three years. The House of Parliament also agreed with the amended contract and so, after the New Guinea Company had accepted the conditions imposed by the Reichstag, the contract concerning the transfer of sovereignty over New Guinea to the Empire became legal on 21 March 1899 [234] after the third reading in the upper house. The contract became effective on 1 April. By settlement of the Council, Second Grade, von Benningsen, former finance director for the government of German East Africa, was appointed the first Governor of German New Guinea. The station of Herbertshöhe in the Bismarck Archipelago was chosen as the seat of the governor. Kaiser-Wilhelmsland is managed from there, and indeed Friedrich-Wilhelmshafen is expected to be the main station again. In 1896 von Hagen had shifted the seat of the administration to Stephansort with views to centralization, because that station had developed the fastest, mainly through plantations.

Considering the excellence of the harbour and the generally favourable situation, Friedrich-Wilhelmshafen is preferable as the main station. As for the earlier stations that had been established since the foundation of the Protectorate, apart from Finschhafen or Kelana, Butaweng, Maraga, and Hatzfeldthafen, for this or that reason such as unfavourable soil and health conditions, or hostile behavior of the natives, they have been abandoned.

The plantation of Jomba, about six kilometres from Friedrich-Wilhelmshafen on the Jomba River, was temporarily closed. It has recently been re-opened as a tobacco plantation. Like Jomba with Friedrich-Wilhelmshafen, so too are Konstantinhafen and Erima together with Erimahafen, economically connected with Stephansort. Furthermore, on the island of Seleo in Berlinhafen, the station of the same name, established by the merchant Kärnbach in 1894, recently passed into the possession of the company following his death in 1897, and forms a special administration. Since Seleo is only in the making, not much more can be said. Anyway, the station is to be significantly expanded and enlarged. A series of land acquisitions has been made on the adjacent mainland and on the islands in Berlinhafen. A station has recently been set up at the foot of the Bismarck Range.

Plate 20

Butaweng station of the New Guinea Company

Stephansort, which has come into very extensive operation especially in the years 1895 and 1896, certainly makes a very friendly, attractive impression on every newcomer. If you have walked the beach at Bogadjim and passed through the well-maintained village on your way to the gardens [235] you immediately pass the stately house of the Rhenish Missionary Society on the right; a short distance further, on the left of the main path lie the hospital facilities — quite spectacular for a tropical colony. These comprise firstly the hospital for Europeans, with a hall, four rooms and a veranda; the pharmacy together with gynaeological ward and side rooms; then a house each: for a nurse; for infectious patients; for patients with diarrhoea; for convalescents; and for monitoring newly-arrived workers in hospital. Since all these buildings are near the sea and at the same time situated in a park-like woods, good air is well catered for. Not far away on the right-hand side is the Chinese *kadeh*, a shop that is kept by a Chinese with support from the New Guinea Company; the storekeeper, like those of the Malayan *kadeh*, has, among other things, the obligation to slaughter once a week. Once you have passed the doctor's house, consisting of two rooms and a big veranda, together with outbuildings, on the same stately path you come to the imposing main building in Stephansort, situated on a well-tended roundabout, the dwelling of the Director-General of the New Guinea Company, with writing rooms on the ground floor.

In Stephansort we also have a big clubhouse with a billiard room, where Europeans tend to go of an evening after work, or gather casually on Sundays, and where refreshments of all kinds are on sale at a reasonably price. This clubhouse was developed at the instigation of Director-General Kurt von Hagen who, unfortunately, died prematurely and to whom Stephansort owes so much, with collections from officials and grants from the Company. With its splendid location in the park, and right on the lake, it invites the passing wanderers to settle down on the veranda. Nearby, there is a shooting range for Europeans.

As for other residential buildings for Europeans, there is an administrator's house; nine homes for assistants; an overseer's house; twenty workers' houses for Javanese, Chinese, and Melanesians each contructed for an average 50–70 men; and finally four Chinese *kongsies* each for 40 men, of which of every two 20-man workers' houses included an overseer's hut and a [236] kitchen. The large number of workers' houses is necessary because the land is worked not only by Papuans recruited from the Bismarck Archipelago and from the southeast of Kaiser-Wilhelmsland, but ever since the existence of the plantation Chinese and Javanese coolies have been brought in each year for tobacco cultivation. An indication that even the working classes do not consider the health conditions in Kaiser-Wilhelmsland as dangerous, is the fact that after the expiry of their contracts many of the Chinese and Javanese renew them without returning home; others even settle permanently in Stephansort upon completion of their employment relationship, as free people, to operate industrial or commercial enterprises. Currently there are 150–200 such Chinese and Javanese who work in the plantation as artisans, gardeners, servants or laundry people for a daily wage. At 31 July 1897 there were 926 men and women on the station as recruited workers, including 167 Chinese, 264 Javanese, and 495 foreign Papuans. In addition to these, there is the recently importation of 300 Chinese who, of course, for the most part would probably find employment on the recently reopened Jomba plantation.

The recruitment of the Javanese takes place under supervision of the Dutch-Indian government, through the mediation of the Imperial German Consulate-General in Batavia. The people are recruited from various villages on Java. Also, obtaining Chinese coolies from the Straits settlements takes place after first obtaining the permission of the relevant colonial administration. Determining factors for the respective rights and obligations of employers and workers, are the provisions of the Dutch-Indian Government of 15 July 1889, and those of the Straits Settlements, namely the Crimping Ordinance of 1876 and the Crimping Ordinance Amendment of 1892. Wages have recently been paid to the Javanese and Chinese in German currency; their savings on the

other hand have been passed on to them in the form of cheques to the company's agents in Surabaya, Batavia, and Singapore, a measure that has proven successful, because by this method the people are not led into the temptation of squandering or wasting their money in other ways during their journey home. The Papuans receive their wages weekly in merchandise, but only what they require. At [237] the end of their period of service, they are given their box of goods packaged to the value of wages owed, and where wished-for items, some of them quite amusing, had probably been taken into account. Since the transport of Chinese coolies from Singapore brings in a disproportionately large complement of invalids, and individuals weakened by excessive use of opium almost every time, the New Guinea Company is revisiting the idea of procuring coolies from Singapore, and has recently made an attempt to recruit Chinese from Hong Kong.

From the workers the Chinese and Javanese obtain the food that they are used to at home. Smoked fish, sour vegetables and other staples are imported for them; and likewise, the main staple, rice, is procured by the company. They grow kitchen vegetables themselves or the *kadeh*-holders do: namely pumpkins, eggplant, beans, cucumbers, radishes, and various types of cabbage and lettuce. The *kadeh*-holders sell food and related items retail, at prices that are under the control of the head of the plantation, as these also have to provide the workers with a good daily diet for about 40 pfennigs. They also conduct extensive poultry and pig-raising operations.

Drinking and cooking water for Europeans and workers is collected from individual small mountain streams providing water of excellent quality. The need for fresh meat is met by maintaining about eighty units of livestock. The rest of the food supplies for meals, especially for Europeans, is provided by the big station shops at Friedrich-Wilhelmshafen and Stephansort; the station vegetable garden; and the three *kadeh*. These keep hens, which provide fresh eggs daily. Also, virtually every official has a large chicken run.

Among the other buildings in Stephansort we find several sheds for tobacco, three fermenters, and twelve dry barns, stables with stalls for the sixteen station horses, an ox stall for eighty-seven oxen, several cow sheds and, finally, sheds and coach houses for the light railway. Konstantinhafen, founded in 1886 and only about fifteen kilometres from Stephansort, had been connected as a neighbouring station with Stephansort since 1896. Recently, coconut palm plantations and solely-experimental plantations have come into consideration: there, corn, sesame, cassava and agave thrive and, apart from rubber plants, fruit trees and in particular coconut palms have been planted. [238]

From Stephansort a broad carriageway about 7.5 kilometres long travels northwest to Erima, and from there, over undulating terrain through the jungle, to Erimahafen. The Yori River separates Erima from Stephansort. In Erima there is a big, chief-assistant's house, drying barns, and outbuildings. Erimahafen is connected with Stephansort by a light railway of 0.6 metres track width, which meets every need. With well-appointed wagons it relieves the transport of both people and goods from the Erimahafen roadstead to Stephansort extraordinarily well. The ten-kilometre-long railway runs inland from Erimahafen in a south-south-westerly direction through the middle of the jungle to Erima. From there it goes southeast, over the Jori River at the main administration building, past the mission, and as far as Bogadjim. Spurs pass from this line up to a distance of about five kilometres southeast to the bank of the Minjim, and southwest as far as the foothills of the Örtzen Range.

Erimahafen is the port of Erima, and apart from docks and warehouses there is only an assistant's house with outbuildings. The loading and unloading equipment on the shore of Erimahafen have proven very useful for maritime transport, although the pier grants satisfactory protection only for canoes. Once the focus of the New Guinea Company's enterprises has been full shifted to the more suitable Friedrich-Wilhelmshafen, which meets all their requirements, Erimahafen will lose its importance.

Unfortunately no land route leads from Erimahafen to Friedrich-Wilhelmshafen; application for it is often discussed, probably also planned, but so far not yet carried out. They shun the cost of equipment. However, the finished road, apart from the other tangible benefits, would undoubtedly contribute much to increased dealings with the natives. The Friedrich-Wilhelmshafen station is about twenty-three kilometres away from Stephansort; its economic operation has shrunk significantly in favour of Stephansort since 1896. Recently it has risen again, in recognition of its value. The station had been set up in the summer of 1891; it lies in the northern corner of Astrolabe Bay, directly into the sea to the east, framed by small coral islets and reefs to the north. In a semicircle of about six kilometres westward, the land is flat, then a chain of hills rises to five hundred metres. Only the north-east part of the harbour is inhabited, unfavourably influenced neither by [239] mangrove shoreline nor swampy estuaries and above all accessible to the sea breeze. In any case it is a fact that with increasing civilizing, health conditions are steadily improving, indeed lately they have become quite good. However, in Friedrich-Wilhelmshafen barely a single European was left unharmed by mild attacks of malaria, but on the other hand it must be considered that malaria is almost the only disease for Europeans there, and so far it has not shown itself to be strikingly vicious. So long as Friedrich-Wilhelmshafen has existed, on the whole only nine people have been struck by blackwater fever; of these, almost all were restored after a timely departure from the Protectorate, usually after a short stay on Java. Some of them even returned to the place of their activity after protracted leave. Among the coloured workers in Friedrich-Wilhelmshafen malaria caused only two percent of sick days in the last year; in Stephansort sixteen percent of all illnesses, so that even Stephansort with its reputation for being an unhealthy place, will gradually lose that reputation now that the general hygiene conditions can be regarded as excellent.

Friedrich-Wilhelmshafen had expanded in 1893-1894. In 1896 thirteen dwellings for Europeans stood on two-metre-high poles; ten buildings not permanently occupied, including an office with five large, airy rooms, several stores and shed, also a sawmill, an *atap* [palm-thatching] factory, and five dwellings for coloureds. The European hospital associated with Friedrich-Wilhelmshafen, previously located on the island of Beliao, was relocated to Schering Peninsula where the house once inhabited by Governor Schmiele had been provided with hospital equipment according to need. These are excellent both for Europeans and for coloureds, and are adequate for eight whites and 160 coloureds. The natives' hospital is situated on Cutter Island in the harbour, where even the medical assistant lives in a newly-built home.

The main food for the Papuan workers consists of rice, besides which they also get bananas, sweet potatoes, and taro grown on the station. An animal is slaughtered every week and there is often fishing: then there are fish and meat dishes for the workers as well. The fresh meat requirement for Europeans is always met by hens and other poultry, as well as extensive birding. Canned goods and groceries of all kinds are available in the company store, which is open twice a week. Fruit (bananas, pineapples, grenadilla, lemons, papayas, melons) and vegetables are supplied from the gardens laid out in front of virtually every European house, as well as the station garden, which is under the care of a Chinese. Water for the station is provided by a cistern, and also rainwater is collected from the corrugated-iron roofs in tanks erected alongside the houses, and serves as both washing and cooking water. The houses are now consistently high and spacious, and provided with broad verandahs. Against each house there is an outbuilding, which contains kitchen and bathing equipment. The coloured workers' (Papuan) clothing usually consists of a loincloth; that of the Europeans throughout the Protectorate, a white washable suit that is changed once or twice each day.

For boating within the harbour, a pontoon, fifty-foot-long and forty-foot-wide, was constructed in 1895. At low tide it sits about seven and a half feet above the water level and meets all the requirements of vessels with the deepest draught. To enable navigation by vessels at night, a

Plate 21

Workers' house in Kaiser-Wilhelmsland

Europeans' house in Kaiser-Wilhelmsland

permanent fire beacon is provided as a navigation mark at Cape Kusserow. These harbour installations have been taken over contractually by the German Empire. The pretty paths, stately homes, green grassy areas and gardens, give the station a pleasing appearance.

Worker numbers had been significantly limited in Friedrich-Wilhelmshafen since the relocation of the headquarters to Stephansort. Likewise official staff had been reduced for the same reason. In 1897 this consisted of only a station master, who was also the police chief, a book keeper and warehouse official, a doctor and his medical assistant, and a bureau official who doubled as harbour master and oversaw the workers' depot. Two machinists presided over the workshop and the sawmill. The operation was limited by and large to maintenance of the buildings and further planting of coconut palms, of which there were 2,000 on the Schering Peninsula and 82 older trees and about 600 one-year-old trees in 1897. Recently these plantations have very greatly increased. In addition a supply of coal has been kept in Friedrich-Wilhelmshafen especially for warships. The hours of work for the office staff is [241] usually 9 a.m. until noon and 3 p.m. – 5.30 p.m.; for the plantation officials 6 a.m. – 11 a.m. and 2 p.m. – 6 p.m.; the coloureds work from sunrise until sunset with a two-hour break around noon. When the officials' tasks are finished in the evening, they probably take a long or a short walk, particularly when they have sedentary activity behind them, then bathe, and go to table at seven o'clock. After dinner the officials visit one another for a game of skat [three-player card game] or for stimulating conversation, or they give themselves over to reading one of about two hundred volumes available in the library, or they visit a sick person in need of cheering up. The arrival of the mail steamer every seven or eight weeks bringing letters and passengers, or now and again a warship, or a vessel sailing under a foreign flag, brings a pleasant variety in the monotonous but never boring lives of the Europeans.

In Stephansort in recent times before the Empire took over state administration, the official staff comprised the Director-General who was also Acting-Governor, the imperial Judge of the Western Jurisdictional District, who acted at the same time as the Registrar and judicial head of the station and the seamen's office, two plantation overseers, two principal assistants, seven assistants, a bureau chief, a clerk who was also the clerk of the court, and the doctor with a medical assistant.

So far the revenue of the administration, insofar as it is derived from the rights of sovereignty, bears no relationship to the vast sums of money that the New Guinea Company has sacrificed. This amounted to about 50,000 Marks a year. However this is over such a short period during the development of the Protectorate that it could not be otherwise. The revenue of the administration comprises mainly commercial and personal income tax, export duty on copra, import duty on liquor, and some licence monies. In addition there are fees for worker application processing, court costs, court fines and police fines, maritime fees, registry office fees, and finally allowance from the Imperial Post Office for two postal agencies in the Protectorate.

For the administration of justice, the Imperial Act of 17 April 1886 applies, bringing into force the civil law, criminal law, [242] and judicial proceedings under the provisions of the law on consular jurisdiction for the Protectorate with a few modifications customized for the particular circumstances. In the execution of the Judicature Act the Chancellor authorizes the Governor to exercise jurisdiction in the second instance, and two officials to exercise jurisdiction in the first instance, one in Kaiser-Wilhelmsland, the other in Herbertshöhe in the Bismarck Archipelago.

The acquisition of property and the ownership of land is regulated by the Imperial Decree of 20 July 1887, the corresponding executive order of the Chancellor of the same date, the instructions of the Directorate of 10 August 1887, 15 February 1888, and 20 July 1892; also by the general provisions for transfer of land to settlers in the Protectorate of the New Guinea Company dated 15 February 1888, the Regulation on the establishment of land registry districts in the Protectorate of the New Guinea Company from 16 October 1888 and 4 March 1896. The Regulation dated 1 August 1894 concerning the nature of New Guinea currency, governs coinage. Based on this regulation, the New Guinea Company has so far minted 50,000 New Guinea Marks

in gold coins; 200,035 New Guinea Marks in silver coins; and 20,000 New Guinea Marks in bronze or copper coins. In Article 5 of the new treaty concluded with the Empire, the company renounces the right to issue further coinage. The Empire reserves the right to put the embossed New Guinea coins out of circulation by fixing a certain time limit. In this event, the New Guinea Company is obliged to redeem the pieces against the same sum of Empire coins. Should the redemption period expire before 1 April 1905, half of the sum received shall be collected at the expense of the Empire. The Police Ordinance of 13 December 1889, and of 17 November 1897, as well as the Quarantine Ordinance of 29 September 1891 and 24 April 1893 continue to apply provisions of the ordinance in the port, and secure against the introduction of contagious diseases; finally, the ordinance of 23 September 1897 regulates the operation of the mining industry with regard to precious metals and precious stones within the Protectorate of the New Guinea Company.

In this manner, through careful protection in every [243] direction, and the preparatory pioneering work of the New Guinea Company, the path was best smoothed for settlers. Nevertheless, the number of European inhabitants of Kaiser-Wilhelmsland has not yet reached a hundred; these comprise administrative officers, planters, and missionaries.

The obstacles that hinder agriculture in New Guinea are of natural origin in most cases. These are the evils that every newly-opened tropical land tends to offer up, since virtually the entire country is most densely covered in virgin forest. Furthermore, one has to deal with climatic influences, which hinder agriculture particularly through massive downpours, earthquakes, and malignant diseases, as in every other tropical country. The vegetation seems virtually impenetrable, and is so luxuriant that wherever there is no native path you have to make your way through the tall bushes step by step. People may soon look after the native paths and produce new ones in Kaiser-Wilhelmsland, as has already begun in the eastern administrative district; the remaining obstacles to transport and existence are not so significant in Kaiser-Wilhelmsland as in other colonies. Every tropical colony requires its sacrifices to swamp fever. The country owes the fact that the numbers have been comparatively limited, especially in Kaiser-Wilhelmsland, to the New Guinea Company, particularly in recent years of its administrative activity, having been prudent, insofar as it was able, in providing healthy living conditions and, above all, healthy housing for its officials. Apart from the initial period and the times of relocation, the demolition of old stations and the construction of new stations, the housing conditions of the officials have generally been quite good. The Finschhafen catastrophe at the beginning of 1891 had its origin more in local conditions, and was probably a result of the drying-out of the coral reefs, which had been exposed for a long time, and an unusually-long period of drought. At any rate, with construction progress, health conditions improved each year, a viewpoint favourably emphasized in recent annual medical reports from Stephansort and Friedrich-Wilhelmshafen.

From the very beginning there has also been a similar level of care for the natives [244] as for the Europeans. By the Decree of 13 January 1887 they were to be protected from the harmful effects of spirituous liquors that had been so devastating to the life and health of the aborigines in other colonies. The same regulation ensures that they are made familiar with the use of firearms at an early stage, and that these can be removed from the Protectorate without any recourse. Employment is controlled by the above-mentioned Ordinance of 15 August 1888. According to this regulation, the agents of the individual entitled to recruit, require a licence from the chief administrative officer, giving precise details of the number of individuals to be recruited, the area where recruiting shall take place, and the time period within which this shall take place. Subject to a certain fee, five Marks for the worker, this permit is issued only on condition that the workers to be recruited are to be employed within the Protectorate, and that the ship that will transport them is quite suitable for that task. Furthermore, there are precautionary provisions in the regulation covering the ages, the term of the contract, accommodation, hours of work, and meals, for the people being hired; and a penalty for infringement is provided. Before the workers are taken to

their destination, and returned home from there, the ship transporting them must, at all costs, proceed to the seat of office of the nearest station head, for the purpose of examining the workers. In Kaiser-Wilhelmsland no worker may be employed who is not healthy and well-developed. If not, the administration may require the worker to be sent home immediately. In addition, the regulation prohibits natives who are suffering from a dangerous or infectious disease being recruited. Should recruited workers die during the term of their contract, their belongings will be carefully taken care of under the supervision of the station head, and when workers from the same period of contact are sent home, the belongings are handed over to workers from the deceased's village for delivery to his heirs. This hand-over is rigorously supervised, and strict control is carried out, not only to demonstrate in every detail to the natives that the contract has been fully and finally settled, but also to satisfy the natives' belief that every dead man must have his atonement; [245] the belongings passed on to the heirs are regarded by them as such an atonement. Should such a legacy not be able to be handed over, for various reasons, for example the deceased's village can no longer be found because the natives have dismantled their huts, or the ship could not anchor there because of adverse wind and tide conditions, then recruitment from those areas cannot be counted on a second time. Indeed white people who chance to come into that area may, perhaps, fall innocent victims and as atonements for the soul of the one not returned.

In the event of a contagious disease breaking out among the indigenous recruits, special quarantine stations have been set up both in Friedrich-Wilhelmshafen on the island of Peawai and also in Stephansort, and for convalescence and screening the establishment of a healthcare centre is a settled matter.

Disciplinary power over the workers falls to the station supervisors and the plantation supervisors. Jurisdiction over the natives, conferred upon the New Guinea Company by the Imperial Decree of 7 July 1887 without prejudice to the provision in Section 2 of the Order of 5 June 1886 concerning the legal situation of the New Guinea Company in the Protectorate and which, through the Imperial Decree of 15 October 1897 remains in force until further notice, was also conferred upon imperial officials in Kaiser-Wilhelmsland on 1 April of that year. Based on the first-mentioned decree, a criminal code had already been adopted on 21 October 1888, for the natives and the members of other coloured tribes who were on an equal-footing with them, but were not already naturalized citizens of the Empire.

The station's administration office forms the courtroom, and the station boss is the current Imperial Justice, with two additional appointees in cases of serious crime and capital punishment. In all other cases the station boss deliberates alone. Prosecution is permitted only for actions that are punishable as crimes and offences under the law of the German Reich; however, this provision shall not affect the provisions of the 17 April 1886 Decree set down for the natives, relating to the legal situation of the German Protectorate. Among the punishments are fines, non-custodial forced labour, imprisonment with forced labour, and the death penalty. [246]

There is no special appeal against the station head's decision, although the head of government may mitigate or even dismiss the recognized penalty, even where capital punishment is involved, or, by dismissing proceedings, order a new hearing of the case. If the death penalty is invoked, the head of the station is required to place a report before the head of government for examination of the file. The natives, especially the workers employed on the station, have gradually learned to appreciate the advantages of the setting up of an orderly court and a criminal authority, to the point that in very many instances they denounce criminals or approach the court in cases for protection. Even the free natives have already turned, full of trust, to the station head in isolated cases of incursion by station workers or by members of a neighbouring tribe, leading to hardship. In most cases these are minor offences such as theft, bodily harm, embezzlement etc. that the court has to deal with, very rarely major crimes, and a death sentence has been pronounced on a native in Kaiser-Wilhelmsland only once, so far.

That the natives themselves know how to treasure all the beneficial facilities that have been created for their benefit, is demonstrated by the fact that in the last few years, particularly in the south-east of Kaiser-Wilhelmsland, the workforce on the station has increased and at the same time, the natives liked, and frequently sought, to be recruited as workers for the New Guinea Company, and in many cases renewed their contracts with the company. Also, in more recent times, following the example of the Javanese and Chinese, they have tended to settle on the station itself, as free people. And so in the past year about twenty-three Melanesians and their families have settled in the vicinity of Erimahafen upon completion of their contract, to work for a substantial daily wage on the stations. They have built their own huts and grown their own food. This has increased the workforce on the station at the same time. A further favourable sign of the natives' confidence in the steadily-growing European influence on Astrolabe Bay is that in most recent times the villages on the Bogadji coast have more than doubled their populations due to influx, and that [247] a lively exchange-trade has developed also, among the natives of the area around Stephansort, the Bogadji people, and the station workers. Likewise, in Friedrich Wilhelmshafen a so-called market trade has recently developed between the natives of Beliao, Siar, Ragetta and other islands on the one hand and the mainland stations on the other, on certain days of the week. And finally, in past years the Rhenish Mission has succeeded in getting natives from Ragetta, and the Jomba Islands near Friedrich-Wilhelmshafen to agree to undertake cutting-back and burning of light scrub and *alang-alang*, as cooperative work.

This immediately distinguishes Kaiser-Wilhelmsland from the eastern half of the Protectorate to the former's advantage, in that the natives, thanks largely to their peacefulness, do not create many problems for the administration. Of course the good influence that the missionaries in Kaiser-Wilhelmsland exert on the natives, and their mediation in minor friction between the natives and administrative staff, which they have carried out in a commendable manner, have promoted these peaceful relations between the natives and the administration.

Missions have been in the country for thirteen years. The first was the Neuendettelsauer Mission, which in July 1886 sent out Johannes Flierl as the first emissary to Finschhafen. At the beginning of October the first mission, Simbang, was established on Langemak Bay; the second followed in November 1889 in the Tami Islands; and the third was set up three years later by the missionaries, on the Sattelberg, with the intention of building a health centre there. In this way it was possible for the mission to make contact with the coastal-, mountain-, and island inhabitants of Kaiser-Wilhelmsland at the same time. The mission staff consisted of fourteen people, and comprised the following: on the island station of Wonnam there was only one missionary, who was assisted in external services by a young native who had been educated in Germany. The coastal mission station of Simbang consists of three missionaries and a single mission sister; while the Sattelberg mountain station comprises a missionary with his wife and four children, a single missionary, and a white worker who looks after the garden. The mission's expenses, amounting to 15,000 Marks annually, are [248] defrayed by members and friends of the Neuendettelsauer Mission Society in Bavaria. As an initial requirement for fulfilling their task, the missionaries having been studying the native language from the outset, and on Tami and Simbang a good start has been made on exploring the dialect of the tribe. The missionaries seek to achieve this by two approaches, one by visiting the natives and establishing contact with them, and then by setting up a mission boarding-school. The boys who attend these are given school lessons in the morning, and gardening instruction in the afternoon. There are daily devotions and worship services. School lessons are limited somewhat to spelling, writing, counting, religious instruction, and singing. On none of the three stations has mission work yet flourished to the point of baptism of the natives; however, elements of civilization have been carried over to the adults through the education and instruction of the youth.

A second, the Rhenish Missionary Society, has had to struggle with major difficulties right from the very beginning. The village of Bogadji was the starting point of this mission; attracted by the large, clean Papuan village, Missioner F. Eich settled there in May 1887 as the first missionary of the Society. Several years later the missionaries Scheidt and Bergmann arrived alongside him. In January 1891 Missioner Eich had to leave the Protectorate because of illness, and in May the missionaries Scheidt and Bösch were murdered by the natives while in the process of establishing a settlement on Franklin Bay. Two years later the missionary Arf fell victim to malaria while attempting to set up a further station in the foothills of the Finisterre Range, and another two years later the Society lost a co-worker on Dampier, in the person of Missioner Barkemeyer. In 1889 the second mission station, Siar, near Prince-Heinrichhafen, was established by Missioner Bergmann, who still has his seat there. The station set up on Dampier in 1890 had to be surrendered in 1896 for various reasons. In its place the station of Bongu appeared on Astrolabe Bay in the vicinity of the village of the same name. The three mission schools, on Siar, neighbouring Ragetta, and in Bogadji, are [249] progressing favourably. The introductory subjects are the same as those of the Neuendettelsauer Mission; also, on Bogadji and Siar the language studies of the missionaries had progressed to the point that the missionaries stationed there had successfully translated some of the natives' stories and legends into German, as well as a few Bible stories into the local dialect.

There is not much to say about the Catholic Mission, *Vom göttlichen Wort*, founded in 1896 on Dudemain Island north of Berlinhafen. The island is the seat of the newly-established Catholic Prefecture of New Guinea, which is separated from the vicariate administered from Issondun by the Congregation of the Sacred Heart. It is headed by Father Everhard Limbrock, assisted by two other priests. Two mission stations have been established so far. The Prefect had already been successful as a missionary in China. The prefecture was given the name *St José*, and is supported in every way by the administration.

The means available particularly to the evangelical mission in Kaiser-Wilhelmsland are, unfortunately, quite limited. This is very much to be deplored, because the missions, with the means at their disposal to contribute to the education and support of the natives can already be effective in many aspects, having regard to their position with the natives, where it is not always possible for the administration. And the missions in Kaiser-Wilhelmland have shown great skill in treating the natives in the right way. For instance, the Rhenish Mission in Bogadji and Siar has often succeeded in convincing the natives of their wrongdoing in different situations, and in attracting them to various services in the individual stations. In Stephansort for example, after persuasion by the missionaries the natives supply taro, bamboo, and yam seedlings, bring along runners, haul wood for building barns, and even help in the building process itself. In Konstantinhafen the natives of the surrounding villages are very often busy on the station, and in Friedrich-Wilhelmshafen the people of Ragetta and Siar often provide a helping hand in loading and unloading the steamer when the number and strength of the employed workers is insufficient for the task in hand. For the Papuan likes working for the European if only for a short time, days [250] or hours; he is taken out of his accustomed situation. Thus the Papuan of Kaiser-Wilhelmsland in the area around the mission station might, with his agreement, be quite valuable as a worker. Attempts have already been made in this direction. Even though they have not always been successful so far, this may be due to the fact that giving the requisite forebearance to the supervisor responsible for oversight has been overlooked. Another reason for the failure of these attempts is that, with the arrival of the post-steamers, the natives in the vicinity of the stations have become too accustomed to receiving high payments and gifts during the exchange trading which takes place with strangers and newcomers who visit the villages near the steamer anchorages. This must be authorized through administrative channels to be limited solely to the actual native villages in the vicinity of the mission stations, and on the stations themselves the natives must be encouraged to a brisk visit and trading with regulation of pricing. Foreign passers-by and newly-

arrived officials who are unfamiliar with the exchange system, spoil the prices in such a way that year by year it becomes more difficult in the vicinity of the big stations to move the natives towards a realistic price for their products, and to obtain their services for labour.

The absence of ruling chiefs within the Protectorate is a major reason why the natives have such difficulty in accepting any position whatsoever that makes them dependent on the Europeans. Another reason is their egoism and their communism. Every village, indeed every family, strenuously isolates itself from the others in order to reap any advantage that might come the way of the individual from contact with the Europeans, and keep it as much as possible for themselves. To this end, threats and suspicions are not spared in beguiling and deterring others in order to gain a closer relationship with the Europeans, when the self-seeking advisor sees it as in his own interest. Nothing can be enforced in this respect. The Papuan will become accustomed only gradually to entering into more active contact and a firmer connection with the settlers. It will have to be made easier for him by making pathways, friendly encounters and, above all, by studying and appreciating his usages and customs. Then for Kaiser-Wilhelmsland too, the time will no [251] longer be distant when we can begin to work with our own native material, like the English in British New Guinea, instead of with foreign worker material that swallows up so much money, and our Protectorate subjects will not be a burden but an aid.

We do not want to be unmindful that the great distance of the Protectorate from our homeland is a drawback that cannot be denied. However, this disadvantage is well and truly offset by the fertility of the land, which enables the production of only fine, high-paying products, and should it prove true that the region at the foot of the Bismarck Range is economically gold-bearing, then Kaiser-Wilhelmsland will become of great importance in a single stroke. The excellent quality of the country will, however, only be revealed when the great capital and enterprises have been embarked on in large scale, and it is brought before the eyes of the Motherland what treasures the land contains. Then it will be true that Kaiser-Wilhelmsland is the pearl of all our tropical colonies. [252]

VIII. British New Guinea

1. Coast and surface form

British New Guinea includes the greater southern half of eastern New Guinea, and extends approximately from 141° to 151° E., and from 5° to 12° S. The border with the Dutch territory, which begins on the south coast at 141° 1’ 47” E., in the middle of the Bensbach River, follows this meridian until it intersects the Fly River then follows up this river valley until 141° E., and continues along this meridian until its intersection with the frontier that separates the Dutch and English possessions on the island. The northern frontier of the German Protectorate begins at the ideal intersection of the fifth parallel and the 141° meridian and then runs south-east of the Blücher, Sir Arthur Gordon, and Wynne Ranges, and the Albert Victor Mountains as far as the ideal intersection of the eighth parallel with the 147° meridian, and then follows the eighth parallel to the sea coast at Mitre Rock (Boundary Cape). Precise definition of the border is still pending, but would be highly desirable with regard to the goldfields newly discovered in the British border area of the Mambare.

The border between Kaiser-Wilhelmsland and British New Guinea is the Ikore (Gira), an arm of the Mambare River. According to Sir William MacGregor, the former Governor of British New Guinea, the latest research information places Mitre Rock 5–6 km within British territory. [253] The border tribes are the warlike Anjiga and Gonuro peoples. The mouth of the Ikore is still in Kaiser-Wilhelmsland; in its lower course it is sometimes to the left and at others to the right of the border. The riverbanks are bordered by usable, arable land and offer just as fine a sight as favourable settlement sites. Population numbers are great. On the bank near the coast lie the main villages of Wade and Diwarre, allies of the anti-administration Mambare tribes. The Clyde, which flows out further southeast is also nothing other than a branch of the Mambare; its main course is southwest to northeast. It has little value as a means of access into the interior. The main arm of the Mambare flows into Traitor’s Bay and is navigable to small vessels. The channel is not very wide, but quite deep. Unfortunately, there is always such high surf running at the mouth that entry into the river, even with canoes, is dangerous. The river delta is very low-lying and covered in mangroves. Traitor’s Bay itself does not offer good anchorage, since it is full of sandbanks (Rüdiger, 1897:282). On the other hand, between it and the confluence with the Clyde there lies a small cove, which offers a good roadstead during the Southeast Tradewind.

Flat land extends from the Mambare to the foothills of Mount Otovia. Not far from the coast the Mambare receives a small tributary, the Green; beyond, is a long stretch of country totally unsuitable for planting. Further inland, on the slopes of Mount Scratchley, the Mambare is divided into the Chirima and the bigger Yodda. There are many useful trees here. About one to two kilometres south of Mitre Rock there is good anchorage in Douglas Harbour, with a small stream flowing into it. South of the Mambare the coast is formed by wooded hillsides; just beyond the first small bay in the English region, Robinson Bay, where the Opi flows in, is a large village with many coconut palms near a station of the Anglican Mission. A small river, the Kumusi, empties south of there; it is widely navigable for launches for fifty nautical miles although the bar at the mouth is difficult to negotiate.

A thickly-wooded plain surrounds Holincote Bay and [254] only a few, although good settlements are found in the sago marshes that stretch to Cape Killerton. The next promontory is formed by South-East Cape, where the coastline begins to become more populated again. In the village of Oro there is a second Anglican mission station. The land south of there, on Dyke-Acland Bay, is low, swampy, and wooded: not a welcoming area. Several tiny streams open into the bay. Vegetation is sparse; mangroves and casuarinas predominate. In the Paiwa region empties the Musa River, discovered by MacGregor in 1893. It consists of two sources, the Moni and the

Adaua, coming from the Owen Stanley Range and arising probably on Mount Victoria. South of the foothills before the splitting of the rivers lies a densely-wooded and populated plain, which runs westward. Soon after the confluence, the Musa breaks through the Didania Mountains. On its right bank they rise up to one thousand metres; the left bank is lined with low, grassy slopes. In its upper course the rapids formed make it impossible to cross the river; in its lower reaches it is navigable for eighty kilometres down to the coast.

On the slopes of the Hydrographers Range arise the small rivers Basari, Kewoto, Umunda, and the great Tambokoro; the last flows into the sea at South-East Cape, the others flow into the sea further south. Between Porlock Bay and Collingwood Bay there are two usable harbours along the coast: Port Hennessy and Maclaren Harbour, and also Phillips Harbour in Collingwood Bay. Undulating slopes, initially covered for miles in *Alang-alang* then densely wooded in the south-east, skirt Collingwood Bay and sweep far into the interior. The small Cecilia, Hilda, Jarrad, Sidney and Jabbering islands lie scattered along the coast from west to east. Immediately beyond Collingwood Bay, Cape Bird peninsula juts far out into the sea. Between it and East Cape stretches Goodenough Bay with the large d'Entrecasteaux island group offshore. This group comprises the islands of Danila (Goodenough), Moratau (Fergusson), Duau (Normanby) and the small islands of Dobu (Goulvain) and Nekumara. Danila is separated from Moratau by the Moresby Strait, and both are separated from Duau by Dawson Strait. The group has a surface area of about 3,750 km^2, and a population of almost 6,000. The northernmost island, [255] Danila, is inhabited by a hard-working, peaceful populace, who eagerly devote themselves to plantation work. The western half of the island is occupied by mountains, which rise 1,600–2,000 metres, and are volcanic in nature. On the broad plain that stretches across the northeast of the island there are numerous villages whose population is estimated at 1,500. Some of them have over a hundred houses. On Moratau, and on its southern neighbour, every village is completely closed-in on itself. Years ago, in the northeast of the former, at Cape Labillardière, Mr Andrew Goldie found hot springs, which later MacGregor later found cold and insignificant, during his stay. But probably MacGregor found hot, saltwater springs in the vicinity of Seymour Bay on the same island whose efficacious effect was recognized by Professor Liversidge, of the University of Sydney. The small island of Goulvain covers possibly 40 km^2. It is an extinct crater, mostly covered with palm trees. Three mountain masses are distinguishable on the island, the highest rising to two thousand metres. Normanby Island, about 2,500 km^2 in size, is densely-wooded and mountainous, composed mostly of shale, rising to 1,200 metres. Since the land is so mountainous it is unsuitable for European cultivation.

The islands are separated from the mainland by the Ward-Hunt Strait. To the northeast are the Trobriand or Kiriwina islands; to the east the Guaweg and Woodlark or Murua Islands; and east of the latter the Manemanema or Nadi group. Between the Trobriand and Guaway group are several scattered islands, all inhabited as far as Dugumenu Island. Several small bays cut into Goodenough Bay, which extends about fifteen kilometres: in the north Rawdon Bay, in the middle Chads and Bartle Bays, in the south Bentley Bay. In the mid-eighties the first German station in New Guinea was near Bentley Bay; conclusion of the Anglo-German agreement saw it abolished.

The coastal area up to Rawdon Bay is undulating and hilly; further east it is a broad flat, suitable for sago and coconut palm plantations. A number of small rivers, whose riverbeds are sometimes dry, flow into the bay. The eastern end of New Guinea, between Bentley Bay and East Cape, is quite well populated, as is the northern part of Milne Bay [256] (Tauwara). The depth of this indentation, which is twenty miles long and ten miles wide, consists of flat land that is well-suited for the cultivation of coconut palms. Milne Bay and Pouro Bay on the other side of the mainland, are separated from each other by an eight-hundred-metre-high ridge composed of limestone and young igneous rock. China Strait separates the mainland from the Moresby Archipelago, where, in turn Basilisk Island is separated from Moresby Island by the Fortescue Strait. The archipelago is very picturesque: the beach is lined with coconut palms and the mountain

slopes are covered in plantations. Sariba, the westernmost and most important island has a population of 500–600 natives. Associated to the southwest is the island of Logea, with an intelligent population of 300–400 souls. The Moresby group also includes the small Dinner Island, with Samarai as the government station of the eastern administrative district.

To the southeast of the Moresby Archipelago are the Engineer, Bon Vouloir, Conflict and the various island groups that form the Louisiade Archipelago. The most important members of these are the De Boyne group, the island of Misima or St. Aignan, the Kimuta-, Sabari-, Joanet-, Jena-, and Southeast (Tagula-) islands, and Rossel Island (Duba), which is notorious for its inhabitants' cannibalism. This mountainous island covers about 1,800 km^2. The vegetation is lush. Of the trees, there is a large number that are rich in resin. Many reefs surround the island; an extensive one that is particularly dangerous lies southwest, near the small Adele Island. Misima Island, further northwest, is considerably smaller, about 750 km^2, and, despite its wildly-rugged, mountainous character, it is heavily populated. Years ago a goldfield was discovered on the island, and today 400 gold-diggers are still working and earning a living from it. The mountains on Joanet and Southeast islands are also gold-bearing. The former is only 185 km^2 and less-heavily populated than the others; there are only four small villages there. Misima was previously the seat of the government's southeastern administrative district, which later moved to Nivani on the island of Panaetti, where there was also a station of the Wesleyan Mission. Scattered about fifty nautical miles south of the Moresby Archipelago are a number of smaller islands: the Lebrun, Kerakera, Ikaikakero, and Wari, Chas- or Teste Islands, the latter renowned as the pottery market of the east of British New Guinea. [257]

The coast of the main island from Milne Bay to South Cape appears very mountainous. A myriad of small coves cut into the land as far as Pouro Bay. Off the coast lie several small islands including Suau with a station of the London Missionary Society. The little Sagara River, coming from the east, flows into Pouro Bay, with the Jadi-Jadi coming from the west. There, Scratchley Harbour provides a good anchorage. The next coastal indent is Orangery Bay towards the west. The coast is flat there, and densely populated. The stretch of land between Milne Bay and Pouro Bay is called Dahuni. The natives call the coastal land west of Pouro Bay up to Cloudy Bay, 'Mailin'; from there to Keakaro Bay is the territory of the Aroma tribe, with their main village of Maupua. The coastal countryside from Orangery Bay to the area of the offshore Amazon Islands is hilly. Further to the west are several large bays: Table Bay, Baxter Bay and Cloudy Bay. Between Table Bay and Orangery Bay lies the Redlick Island group, which includes the small Toulon Island. The land here is poor in rivers; only in Cloudy Bay does the Robinson River form a delta of several creeks, and the Domara River also flows into Cloudy Bay. From Cloudy Bay up to the mouth of Kemp-Welch River flowing from the Obree Mountains, the coastline is again interrupted by bays: firstly by Chestnut Bay and then further west by Shallow Bay and Keakaro Bay.

In 1880 missionary Beswick was first to travel a good distance up the Kemp-Welch River. So far as is known, the river starts from a large basin on Mount Obree, flowing firstly south-west from its source and receives the Georg- with the Lala River, from the right, as the first tributary. In its upper reaches, large boulders lying in the middle of the riverbed make it impossible to pass. Not until ten to twenty kilometres above the village of Tarowa does the river become navigable for boats, and remains so down to the coast. There it flows into Hood Bay, having received several more small tributaries, from the right, the final one being the rather more important Musgrave River. The Kemp-Welch's largest left-side tributary enters in its upper reaches: the Margaret River. Hood Bay is separated from Beagle Bay to the west by a projecting headland and, continuing on to Port Moresby, one bay succeeds another, sometimes bigger, [258] sometimes smaller. Round Head Bay is lined over its broad perimeter by a coral reef with only one small pass; this reef close inshore stretches a further seventy to eighty kilometres westward, with only a few

passes: near Port Neville, Dokura Inlet, and Port Basilisk. Dense bush surrounds the beach in this area, not infrequently interrupted by native gardens close to the coast and beach settlements.

Soon after the village of Tupuselei we approach the most splendid harbour in the British Protectorate, Port Moresby, 147°7' E., 9°18' S., where, at the same time the Port Moresby headquarters of British New Guinea was constructed on a gently-rising hillside. The harbour penetrates quite deeply inland in a northwest to southeasterly direction, and is protected to the west from ocean storms by the small island of Hanudamawa and by a coral bank. The entrance into the inner harbour, Fairfax Harbour, which deepens towards the south into a small bay, is completely hidden by the small Tatana (Jane-) Island, lying in the middle of the harbour. It is navigable to the biggest ocean-going vessels; the anchorage lies north of little Jane Island, directly off Coglan Head. To the east the coastal land of Port Moresby is bordered by the hill of the same name, and to the northwest by the Huhumana Range (210–400 metres) with several villages on its foothills. While the coastal region between Port Moresby and the next incision, Vorsicht [Caution] Bay, is gently-rising hill country, further inland on both sides of the Laloki River, which drains the whole area we find broad stretches of flat, marshy land little suited to agriculture. This only rises, gradually, at a distance of a hundred kilometres from the coast, rising to a massive height in the Horsley-, Lawes- and Forbes mountains, the forerunners of the Owen Stanley Range. These mountains are the source of the Weoru or Brown River, a tributary of the aforementioned Laloki which, like the Vanapa that also arises in the Owen Stanley Range, flows into Redscar Bay, northwest of Caution Bay. In its upper reaches the left side of the Laloki River receives the Goldie River. Also flowing out of the Owen Stanley Range and into the right side of the Vanapa, are the Evelyn-Exton, Kaboka, Atoa, and [259] Taula. The Vanapa offers the best access to the Owen Stanley Range. Three small inland lakes lie just above the confluence of the Brown River and the Laloki River: two near its right bank and one near the left bank. From a little east of Redscar Bay as far as Cape Suckling the coast reveals an equally marshy character; two small rivers, the Kekeni and the rather more important Tutu empty near Redscar Bay. Further inland there are several very fertile districts and many well-populated native settlements. Magnificent, fertile, cultivated land stretches from there to the vicinity of the William River, and has, however, for the most part been adopted into use by the natives, and has only been brought under cultivation, partly by the administration and partly by the Catholic Mission, in stretches here and there. Both the Ethel and its equally water-scarce and insignificant tributary the Hilda flow into the next bay, Hall Sound; however, both rivers are said to always carry water. The most important body of water that flows into the bay is the St Joseph River, originating from the Kobio Range. This river, with a rather torrential drop, is navigable by small steam ships and empties into the sea in four arms. The river that the natives name Paimono flows through a magnificent, undulating area on the slopes of Mt. Yule. The area on the St. Joseph River is one of the most fertile in the British Protectorate, and is very densely populated. The island of Yule (Koro), which is situated off the mouth of the river, about 146 ° 30' E., 8° 50' S., is separated in the north from the mainland by the northern channel, and in the south by the southern channel.

Roughly in the middle between the upper reaches of the St. Joseph River and the small Makuna (146° 30'E., 8° 25' S.) opening into Rolles Bay, there is a large lake, and a somewhat smaller one near Maiwa Bay, about ten kilometres from the lower reaches of the St. Joseph River. Special mention is made of the lakes because the occurrence of inland lakes in New Guinea is rare. Hilly, apparently fertile country stretches between the Coombes River, which also enters Rolles Bay, and the Lakekamu River, made famous by the unfortunate Ehlers' expedition, which flows into Freshwater Bay. The Coombes, or Biaru, River flows a few miles northwest of the Elema tribe's village of Euabu (146°20' E., 8°23' S.), [260] and is navigable for boats twenty-five kilometres from the coast as far as the village of Apanaipi. MacGregor followed the river for roughly twenty kilometres on foot. He turned south from the previously-mentioned village; its

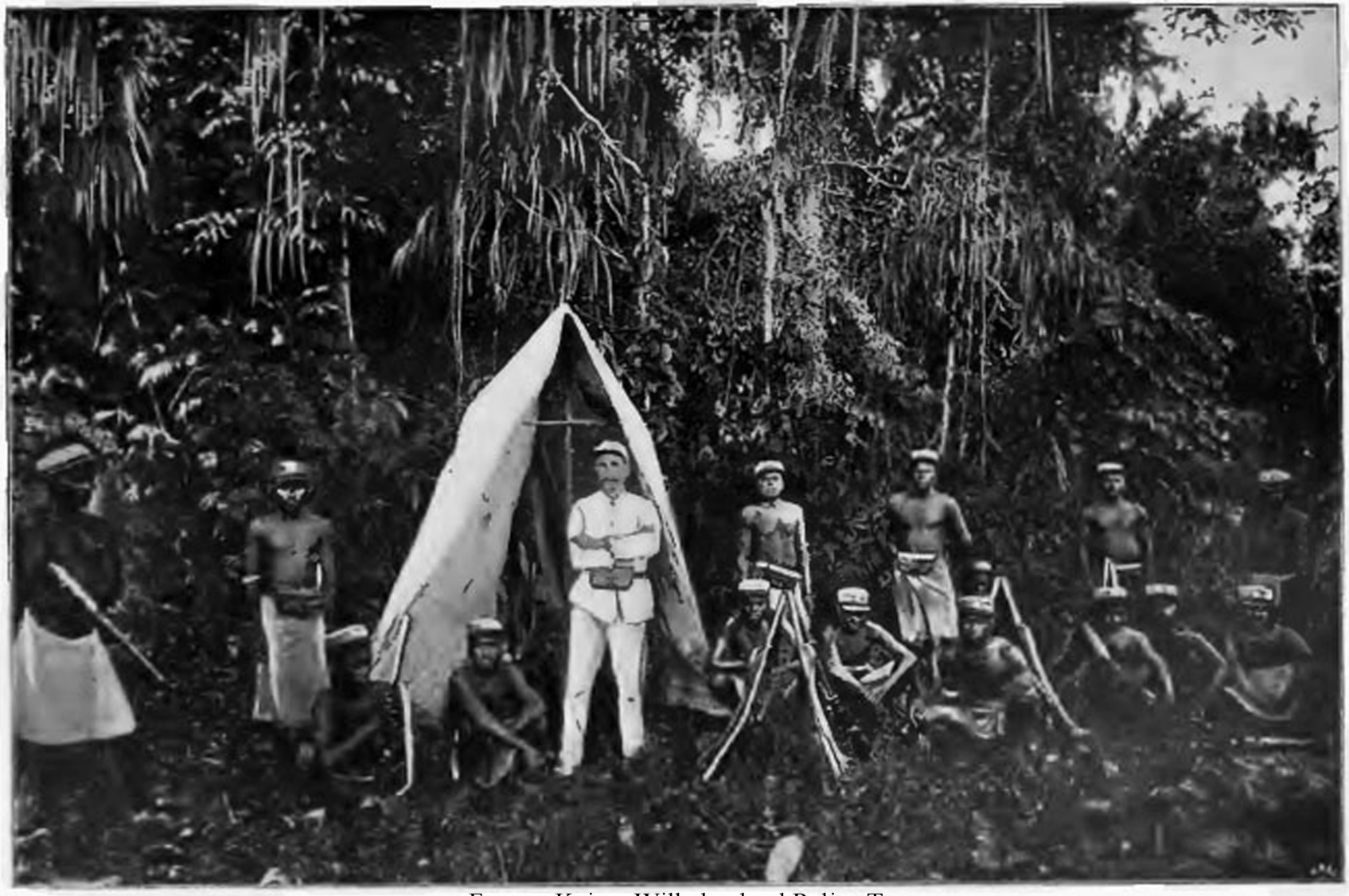
banks were low and swampy. The Coombes flows straight down the middle between the Mekeo countryside and Freshwater Bay lying northwest of its mouth. The natives of both areas not infrequently meet at the mouth, to trade. The middle arm of the Lakekamu bears the name Williams River; the other two arms are called Kaurepinu (Heath) and Narutu.

The Lakekamu arises from the northwestern foothills of the Kobio Range (Chapman Mountain) and, immediately after its division into several arms, it receives the Tauri River on its right side. Before its confluence, this river, up to a twenty-kilometre stretch, is roughly a hundred metres wide and one to two fathoms deep; it is shallower in its upper reaches. The banks are lined with coconut-, sago- and breadfruit trees; now and then gardens and grassland come right to the bank. Numerous fruit trees and panadanus trees surround the high banks of the upper Lakekamu; further upstream it passes the village of Mowiavi, where in 1896 the survivors of the Ehlers expedition were given hospitality. It then flows through a whole series of beautiful groves of sago. Some seventy kilometres above the coast the river is about a fathom deep; it is navigable by boat (Annual Report, 1892:24).

In the interior, between the Lakemanu and the Kaurefrena or Baunarhena, which empty further north-westward, the land rises; It extends in low, wooded hills to 146° E., where the foothills of Mount Albert begin. The stretch of land between Kaurefrena, which is also part of the delta of the Lakekamu, up to the Vailala (Annie) River, a distance of twenty kilometres, is still very little explored. The Vailala was navigated for the first time in 1887 by Captain Hennessy in the schooner *Ellangowan*; then five years later by MacGregor, who penetrated about one hundred kilometres upstream. The river is wide and deep, with no strong current to hinder navigation. At the mouth you can see several beautiful coconut palms, then a mixed forest of mangroves, pandanus, breadfruit trees and coconut palms. About [261] twenty kilometres from the coast is a long stretch of good, alluvial soil, quite undeveloped; then the banks rise to densely wooded hills, which are excellent for establishing plantations. About thirty kilometres from the coast a small, navigable tributary enters from the right, with hill country on its right bank and flat land on its left. A further twenty kilometres upstream lies the territory of the Hakeko people. After about a hundred kilometres, rapids and shallows, only five feet deep in places, start to impede the journey. The land between this point and the central mountain chain appears to be flat land or just low hills.

Between the Kurefrena and the Vailala empties the Varbada or Vaibada River, leaving the Albert Mountains and little explored so far. Hilly, richly-forested land stretches along both banks of this river, rising to four hundred metres at Pollard Peak in the upper reaches of the Vailala. Along the coast from the Vailala to the Orokolo countryside there is a good path along the beautiful, sandy beach lined with coconut palms, sago- and fruit trees, interrupted here and there by small, saltwater streams. Following the Queen's Jubilee River, is a series of major navigable rivers. The Queen's Jubilee comes out of the sandstone foothills of the Albert Victor Mountains: so far unexplored territory. In its upper course the river turns firstly southeast and after about twenty kilometres it turns to the west-south-west. Here the river is about a hundred and eighty metres wide and very deep. Many native gardens come right down to the river bank; there are also native camps here and there, i.e. simple, open huts that the people use as night shelters when they are cutting wood in the area. The soil is a chocolate-brown loam, occupied by tall trees. Along the right bank stretches an alluvial plain covered with thick bush, while on the left bank there are firstly low forested limestone hills which rise to 610 metres further south-east in the Saul–Samuel Mountains extending from north-north-west to south-south-east.

In the vicinity of Woodhouse Junction the river is still three hundred metres wide. Here it divides into two large branches. While the right branch flows towards Port Romilly, the left turns south-south-west toward the sea. About seven kilometres [262] from the coast this arm divides again into two branches, which hasten towards the sea through a forested, inhospitable swampland.



Former Kaiser-Wilhelmsland Police Troop
and their leader, Police NCO Piering, who died during Ehler's 1896 expedition

Not until about fifteen kilometres from the coast does the land begin to rise steadily, the river banks become steeper and the land arable. Between the two mouths of the Queen's Jubilee River a large number of small creeks flow into the sea; the most important are the Maiwau, Arui (Airai), Urita, Wanne and Baroi. Like everywhere else in this area, the land between the Baroi and Port Romilly is low and swampy, mainly covered in mangroves and *Nipa* palms. On the upper Wanne the land is somewhat higher than the coast and, a rarity for this region, produces taro and bananas. There are several islands in Deception Bay, of which Maiden, Parkes and Griffith Islands are the most memorable.

About fifty kilometres inland from Deception Bay rise the Dawes Hills. They are low, and covered in bush. The Stanhope Chain rises in a northwesterly direction. Between it and Mount Dawes lies a rugged, wooded area that seems to be very sparsely populated, for explorers like Bevan who have penetrated these regions found traces of a population only here and there. Southeast of the Stanhope Mountains, whose main mass is composed of limestone, Guthrie-, Fosbery-, Critchett-Walker- and Gill mountains rise between one hundred and seven hundred metres. Near here, Bevan discovered a small lake during his exploration of the Stanhope and Philps rivers. North of the Dawes Mountains rises the low, torn, bush-clad Mount Cunningham, and south of the Dawes Mountains is a very swampy plain, with only a few coconut palms, which, according to Bevan, does not give the impression of being arable. The highest points of the Albert Victor Mountains in the southeastern part are formed by the Hunter, Rusby, Dalley and Sargood mountains; in the centre: the MacArthur, Fergusson, Cairns, Montrieff Paul and Elies peaks; and in the extreme northwest the mountains rise to four thousand metres in the Barkly, Brient and Campbell peaks. These have not been climbed so far.

The Douglas River, named Philps in its upper reaches, probably has its source also in the large central chain of the Albert Victor Mountains. For its exploration we are grateful to Captain Bevan, who proceeded upriver in the launch *Marbel* as far as Fastre Island, [263] at 6° 39'5" S., 144°11' E., in April 1887. Bevan then followed the river on foot for another four kilometres. This point can be hardly more than fifteen kilometres from the German border. The watershed between the German and English territories can therefore be only a few kilometres from Fastre Island. In 1891 MacGregor too took a smaller expedition up the river. The Douglas, or Philps, ranks unquestionably as the most important waterway of British New Guinea. In its upper reaches he often saw rapids that hindered the journey here and there. On the right bank, northeast of Fastre Island, the extreme outcrops of the Warharagi Mountains approach fairly closely, and in its middle reaches the higher, limestone mountains named by Bevan. Here on the right bank are a few small hills, apparently volcanic in origin. At Bowden Junction, approximately 7°18' S., 144° 10' E., the Burns River tributary flows in from the right. To the south are the Clarke Hills, which are only about one hundred metres high, aligned with the Boore Mountains further south. Bernett Junction lies in the vicinity of Clarke Hill; due to the channel flowing in here, the Centenary River, which flows into Langford Sound, three hundred metres wide, appears to be connected with the Philps River, since the entire coastal region seems to be a single, large, cohesive river area.

Between the Gama and the Bebea about thirty-five kilometres further southwest, the coast seems to be quite uninhabited. The Bebea is an arm of the Bamu River, which flows into three estuaries, forming a large delta. The central mouth bears the name of the main river; the western is Dibiri. In its upper reaches the river is called Aworra by the natives. At the mouth the Bamu has a depth of two fathoms, and is connected by a natural waterway with its large neighbour, the Fly. Off the Bamu delta are three islands: Tusito. Nawiu, and Oropai. The hinterland of the coastal stretch between the George and Fly rivers is still totally unexplored territory and, due to its swampy soil, covered in dense, primeval forest, difficult of access.

The principal water course of British New Guinea is the Fly River, opening at 8°33' S., 143°15' E., forming a number of big islands in its delta, the biggest and [264] most important of

which is Kiwai or Kewi. This and the island of Daumori directly in front of it are the only ones permanently inhabited. Kiwai is roughly 64 km long and 4½ km wide, with a population of about 5,000 inhabitants. The island is low, and covered in trees. It gives the impression as though the sea and the river wash more land off the island each year. In the south, the small Ugara River drains the island. Kiwai is surrounded by a number of smaller islands, especially in the west; occasionally when the Kiwai people get tired of their habitual locations, these serve as temporary places of residence. Daumori, or D'Albertis Long Island, is 40–45 km^2 in area, with a population of about 300 souls. It is only about a metre above sea level.

Exploration of the Fly River after it had been discovered in the forties by the warship *Fly*, became the goal of various expeditions. D'Albertis, MacFarlane, Everill and MacGregor navigated upstream in the years 1872, 1875, 1885 and 1889/90, the last as far as the English-German border. After d'Albertis and MacFarlane, the first pioneers of the Fly, had already travelled 250 km upstream, in 1885 the Australian Geographical Society organized a bigger expedition under Captain Everill, to explore the Fly. The actual goal of the expedition was to travel up the river and its tributary the Strickland as far as possible until they reached the high mountain ranges. Everill had to grapple with many difficulties on his journey, which he undertook with twelve Europeans and twelve Malays. The natives proved unfriendly, and as a result of the changing water levels the expedition, whose duration had been determined as six months, was held up in one spot alone for three months. Everill penetrated to 7°34' S., 141°21' E. with his small steamer *Bonito*, and then to 5° 30' S., 142° 22' E., by boat on the Strickland. His principal object was to determine precisely the course of this tributary of the Fly. MacGregor had already sailed up the river in the government steamer *Merrie England* without any danger (Annual Report, 1889/90, p.21 *et seq.*).

Probably the Fly has its source in the mountains of the great Central Range, which traverses New Guinea from northwest to [265] southeast. In any case the main tributary of the Fly, the first to flow in from the left in its upper reaches, arises in German territory in the Blücher or Müller mountains. Here in the Palmer River traces of gold were found during MacGregor's expedition. On the banks of the Palmer and in the upper reaches of the Fly the land is arable; flat sandstone hills rise here and there to several hundred feet, and continue in an unbroken series, gradually climbing to the mountain ranges of the interior. The Palmer flows into the Fly at 5° 40' S., 141° 40' E. Much further south the Fly receives the less-important Alice Hargrave River at 6° 20' S., 141° E. Then the stream describes an arc to the west and flows a stretch of about seventy kilometres to the Dutch territory; forty to fifty kilometres from the point where the river again enters British territory, it receives the Strickland or Bonito from the left. Here the land is low and swampy; wild bananas and breadfruit trees grow in rich abundance, on the other hand sago trees are rare. Few native settlements are encountered in the lower reaches of the Fly; only occasionally are natives seen visiting the banks of the river to hunt and fish. In its lower reaches it is navigable even for bigger ships, and still carries a huge volume of water two hundred and seventy kilometres from the coast. Many islands, big and small, are scattered in the lower riverbed of the Fly: the Cassowary Islands at 7° 57' S.; d'Albertis Island at 8° 20' S.; the Fairfax Islands south of there; and the islands of Bennet and Kaun right in the river mouth.

The Oriomo, like the Binature and Pahoturi that empty further west, are accessible only by canoe (Annual Report, 1889/90, p.23). The island of Saibai lies off the Mabudauan coast; to the west is the island of Tauan. The territory of the Beru tribe extends between the Kawa-Kussa and the more important Mai-Kussa about 60–70 km to the west. Several small coastal rivers: Hamblyn, Macrey and Ward pour into the sea there. Nine kilometres in a southerly direction from the mouth of the Mai-Kussa lies Talbot Island, with the Boigu station of the Administration. The island is swampy and unhealthy. The Strachan Peninsula separates the Mai-Kussa, or Baxter River, from the [266] Wassi-Kussa, or Chester River, fourteen kilometres further west. Both are merely arms of the sea, that unite fifty kilometres from the sea and finally split into small creeks.

MacFarlane, Captain Strachan, Mr Chester, Mr Brew, Mr Strode-Hall, and Sir [William] MacGregor have earned a reputation for exploring all these waterways. Firstly, MacFarlane, a missionary of the London Missionary Society, visited the Mai-Kussa in 1875, and at the same time discovered the second branch, the Wassi-Kussa or Chester River, which is called Prince Leopold in its headwaters. The river was given its second name by Captain Strachan, who explored this part of the river in greater detail in 1885. At the river mouth, (9° 12' S., 142° 21' E.), the Mai-Kussa is about 1,500 metres wide and about 13 fathoms deep in the middle. Immediately before joining the Wassi-Kussa the river is only 300 metres wide and six fathoms deep, while the Wassi-Kussa itself is only half as wide and also five metres deep. The riverbanks are low almost everywhere and covered in mangroves, except for a few places where the banks rise to a height of one and a half to three metres high. At the river mouth the Chester is about 600 metres wide and 5–12 metres deep. Directly off the mouth lie the three islands of Adaberdana, Maat, and Wara-Kana. The Papuan tribe whose territory is on the Strachan Peninsula takes its name from the middle, and smallest of them. The furthest point on the Prince Leopold River that Strode-Hall reached was about seventy kilometres from the coast. He had ascertained that before its confluence with the Wassi-Kussa, the Mai-Kussa received the Yarro-Kussa and the Tomari from the left, and the small Tobia-Kussa on the right, with the first one being 10–20 metres wide. Also, the Wassi-Kussa receives from the right a small tributary, eight metres wide and 1½ fathoms deep, the Herald, further above the Kethel River. From the left, the Alice River and the Wallace River flow into the Prince Leopold.

A water connection between the tributaries of the Mai-Kussa and the Fly on the one hand, and the tributaries of the Wassi-Kussa and the sea on the other, has not yet been found. Between the last-named river and the final watercourse on British territory before the Dutch border, the Morehead, the entire coast, extending over a hundred kilometres, appears to be uninhabited. Beautiful open sandy beach [267] alternates with densely-wooded swampland. The Morehead is about one hundred and eight metres wide and about two metres deep at its mouth. In 1890 MacGregor followed its course up to 8° 32' S., 141° 35' E., at which point the river branched into several small creeks. The river drains most of the country lying between the Fly and the Dutch-British border. In its lower reaches the Morehead is confined by low, swampy banks; only in its upper course, about a hundred kilometres from the coast, is the land arable. Stretching between the Morehead and the spot where a tall, widely-visible pole marks the Dutch border, the coastal region is dull and inhospitable.

2. The population

a. Colour, physique, appearance, clothing, jewellery

The native population of British New Guinea has been estimated to be 3–400,000 souls (MacGregor, 1897:28) according to the current Governor, and this figures appears to be rather too high than too low. With a few exceptions in the far northwest and high in the southeast, at least the coastal lands of British New Guinea are well settled. Even the larger offshore islands like the Louisiades, d'Entrecasteaux, and Trobriand Islands are quite well populated. The most densely populated area is from Port Moresby to Kerepunu, and east of the Fly to Hall Sound, but also on the coastal stretch from here to Port Moresby we come across numerous native settlements. On the upper Fly, and between the Morehead and Wassi-Kussa rivers; in the catchment of the latter; on the Philps River; in the area between Kaurefrena and Vailala; and finally, among the tribes of the interior, southeast of Port Moresby, the land is only sparsely populated. On the other hand, native settlements are found high up in the mountains, at a thousand metres in the Owen Stanley Range on the slopes of Mount Knutsford.

Skin shade varies from darkest black-brown to light yellow-brown. The darkest people are found in the northwest [268] of the Protectorate, on the Fly. More dark-brown than light brown are the tribes on the Morehead; on the Beroe; on the upper Purari in the foothills of the Kobio chain, particularly Mount Yule; and also in the vicinity of Port Moresby. The palest representatives of the Papuan race in British New Guinea are found among the tribes in the interior, on the German–English border. As in Dutch and German New Guinea, we often come across the anomaly of discovering among the inhabitants of one and the same village representatives of the most diverse shades of colour.

The black population along the Fly is generally slim, with long, thin legs and a weak chest. The mountain- dwellers are of a more powerful physique; they have strong leg muscles and a broader chest. The so-called "black race" has a small head, aquiline nose, high forehead, big black eyes, and a small jaw. In the east, the people are better built, but the mouth is bulky, and the corners of the mouth are slack from much chewing of betel (MacGregor, 1897:28). In body size, the native populations of British New Guinea and India are about the same. They are, therefore, smaller than Europeans and not as muscular as them by far. Albinos are not uncommon, but then they are usually idiots. During his travels in the southeast, Otto Finsch encountered albinos in two different places. He found one among the natives of a village that he visited on Chads Bay. The man was as pale as a sunburnt European, with red cheeks and lips and faded red-brown hair (Finsch, 1888:240). He also got to know a family that had two black and two pale children, one as white as a European. Dwarfs are often encountered, both on the mainland and on the offshore islands such as the Woodlark Islands.

The body is generally hairless while the hair on the head is black and usually curly. It is worn longer in the east than in the west; very short, interwoven with fibres on the upper Fly. Straight-haired Papuans are found among the Gouwas in the west, and in the east on the Guaweg (Bernet) Islands between Trobriand and Woodlark Islands, on Teste Island, etc. [269]

In the border region on the Ikore River in the extreme northeast, the whole population, men and women, go about naked (Annual Report, 1893/94 p.74), likewise, on the Kumusi only married women wear a small skirt made from the bark of the mulberry or breadfruit tree. The men on Holincote Bay wrap a band of the same material, usually dyed with clay or with the help of leaves, or with the fruit sap of the banyan tree, around their genitalia. The hair is worn in braided strands, which hang down from the back of the head, while at the forehead the hair is usually trimmed back a few inches; a headdress of cassowary feathers completes the decoration. False beards are not uncommon here as chin decoration while other ornamentation is almost never worn in the far northeast. The inhabitants of Keppel Point have painted, braided armbands or narrow, shell arm rings, turtleshell earrings or those made from coconut shells. Cowry shell jewellery is also found here, in the form of ear- and arm jewellery. There is little difference in either clothing or jewellery between the Papuans just described and the natives of Dyke-Acland, Collingwood and Goodenough Bays. Here, as everywhere else, the population is friendly but poor, and, likewise, clothing and jewellery are also meagre. Both of these are richer and more varied on the other side, in the southeast of the island as far as the Gulf of Papua.

Here, the men wear the *tikini*, a band in the form of a T worn around the body and pulled between the thighs, usually consisting of strips of pandanus or similar material (Cf. Finsch, 1885:12, on this and what follows). Even small boys wear this band, and going about without it is considered indecent. The men also attach great importance to a slender waist, and often constrict the body so tightly in the stomach area that the belly bulges markedly at the sides. Constriction in this manner not infrequently produces a waist measurement of only 58–60 cm. In the west the men wear mostly the *tapa* skirt familiar to us from Kaiser-Wilhelmsland, made from the bark of the paper mulberry tree, although here the *tapa* is much more coarse and not painted as well as, for example, in the Finschhafen area. [270] On the Aird River, Bevan met natives who wore shells to

cover their genitals; this also happened in Dutch New Guinea. The women are almost always dressed, usually in a close-fitting grass-skirt, which is fastened somewhat below the hips, and extends to the knees. In some areas the women love to leave the skirt rather open on one side. They prepare it from the leaves of the sago palm by splitting three-centimetre strips from the leaves with a sharp-edged shell. Further south, from Hula to Keppel Point, they use the broad leaves of an aloe-like plant as the raw material for the skirt.

Serving more for a practical purpose than a decoration are the usually red-and-black armbands plaited from a fine type of grass; objects that one wants to have readily to hand are tucked into them. These armbands are so tight that the wearer's flesh bulges on both sides of them. The *toias*, wide rings made from the base of conch shells, are another type of arm jewellery, providing at the same time important commercial articles. In Aroma and Maiwa a transverse section of a wallaby's tail serves as a wrist ornament; finger rings from cuscus tails can also be found here and there in the southeast. Children often wear a shiny ornament like mother-of-pearl, made from the shells of a small species of mussel often found on the beach, as a necklace. The nasal ornament is sometimes polished from *Tridacna* shell and sometimes a little piece of wood suffices, which the women mostly have to make do with. The nasal septum is perforated early, often at the age of 6-8 years; firstly very thin wooden sticks are inserted, and then gradually thicker and thicker, until finally, particularly in the Kabadi district, very thick wedges make space in the opening. Brow and headdress are quite varied in the southeast: sometimes these are simple bands of dog or wallaby teeth, shells, or glass beads, or they consist only of plaited grass. One often sees a diadem-like headdress consisting of cassowary, parrot, or bird-of-paradise feathers strung on cords, or one consisting of the upper beak of a rhinoceros hornbill with a few feathers and seed kernels fastened to its perforated ends as a decoration. For ear rings, dry fragrant leaves are found everywhere, and are loved especially by women; no less common are turtleshell rings, and on Hood Bay an [271] ornament that we have already met in Kaiser-Wilhelmsland, namely the one made from the bent, hornlike, primary wing feathers of the cassowary. A novelty here is the ear ornament from the extreme tip of the tail of a piglet, which is simply fastened to the ear. Occasionally a mother-of-pearl shield adorns the chest, however this is worn only by wealthy men. Cords of dog's teeth, also popular in Kaiser-Wilhelmsland, are common; added to this are those made of wallaby teeth and, in the west, of crocodile teeth. A neck adornment popularly worn by little girls is a long cord of round discs of cut bark; a not-uncommon neck adornment is the polished portion of a species of *Conus*. However, one chest ornament that occurs only in some areas is a perforated, round shield plate, which is placed onto a thin, curved, shell plate. Breast jewellery made of boar's teeth is rare, and occurs only in the form of two curved pig's tusks bound together at the base and with their tips almost touching, as we quite often see in Kaiser-Wilhelmsland, or one comes across four such tusks joined together at the base, for example in Redscar Bay and its surroundings. As combat jewellery one finds 20 cm long oblong plates, which have several deep indentations on the two longitudinal sides, which in turn are decorated with half-split pig's teeth as a raised edge. Otherwise, the shields are decorated with red, or dark-brown beans. As a peculiarity, it should be emphasized that those fighting hold these shields in their mouths (Finsch, 1885. p.12 *et seq.*).

On their lower limbs the Papuans of British New Guinea very often wear similar plaited ornaments as on the arms, be they made from pandanus leaves, grass, or rattan. These fetters are often painted, but they are worn only by men.

The interior in the southeast, the mountain regions in particular, appear to be only sparsely populated. Everywhere that researchers have penetrated the mountains, they have found few native settlements; on the foothills of Mount Scratchley, MacGregor in 1896 encountered natives in the village of Neneba in the year 1896, [272] who had dark-brown skin shading and black, curly hair. The older people wore whiskers, and their sole clothing was the T-band described above, while the

women wore a simple grass skirt. Earrings made of lizard's tails, and cigarette holders, which they fastened in their ear holes formed the main item of jewellery (Annual Report, 1896:20). Other jewellery had they none, or very little. This seemed to be neither usual nor popular, especially among the mountain dwellers. Thus, for example the natives on the slopes of Mt Knutsford and Mt Musgrave in the Owen Stanley Range wear neither nasal ornaments nor earrings. Only the older people wear thin little discs of white shell delicately arranged side by side, as forehead jewellery. As a head covering they have lobes made from cuscus fur, partially secured with boar's tusks or dog's teeth. Among youths, these are replaced by cylindrical hats made of mulberry tree bark, into which they force their unruly hair. A shield, or rather armour made by plaiting, adorns the chest; it is roughly ten inches wide and long enough to cover the body halfway to the ribs. There are two bands above and below, on each side, to fasten the plaiting at the back. Here the band described above is pulled between the legs and secured. Over this, men and youths wear a skirt roughly twelve inches long made of mulberry tree bark, which is not one-piece, but made from individual pieces cut into strips. Above it, a foot-long net or bag hangs down in front. Neck and legs are adorned with simple, roughly-plaited rings, sometimes painted. In stature and appearance they are stronger and more stocky than the coastal population; their leg musculature in particular is well-developed; their facial expression is exceptionally good-natured, revealing character and energy. Their cheek bones are more prominent, and broader than in the people on the coast. The nose has a Semitic character, but is not as curved as elsewhere. Finally, the forehead and mandible are more strongly built than usual (Annual Report, 1888:70). The people are less shy than Papuans elsewhere tend to be, but [273] easily excitable, quick to become fearful, and just as superstitious as all the other natives of New Guinea. In the Obree Mountains (Thomson, 1892:661) human hair is popular among the natives as a special ornament, whether the bulge hanging down from the head is worn on the chest, or fastened to their belts, arm cuffs, or fetters. They wear the hair on their heads in strands as long as described above. We find a characteristic ornament among the natives of the island of Sariba (Finsch, 1888:277): armbands made from human lower jaws, as memorials to the deceased. The two rami of the mandible are held together by a strong strip of bast fibre, and often a few shells of nut-like fruits hang down from them, and clap together like castanets when the arm moves (Semon, 1896:446).

On Teste Island we find the real Papuan, with long tousled-up hair. Other Teste people wear it on the neck, according to Finsch's description, in long, shaggy strands, which they decorate with *Cypræa* shells. It is not unusual to find blonde, straight hair among young children here (Finsch, 1888, p.282). Women, especially married women, as a rule wear their hair cut short. An exception to this are the women in the Kabadi district who let it grow long, knot it together on the crown and decorate it richly with molluscs (Kurze, 1882:28). People do not like facial hair. They have various instruments for removing it. Some force the superfluous hair between a thumb nail and a piece of pumice; others replace the hair-cutting machine by a little shard of glass or a shell. As an agent for strengthening the beard, young men are recommended a diet of fish by their elders. In the southeast of British New Guinea combs usually consist of a flat piece of wood, four to fifteen inches long, whose end is carved into a three to six-pronged for; or several thin rods tied together at the end by a thin piece of twine to form a fork.

By and large the differences in appearance, [274] clothing, and jewellery among the individual tribes in the southeast are only minor. On the other hand, the difference between natives of the northwest and the southeast is significant, for example between a Papuan from the Katau-Baxter or Fly River and a Port Moresby native. As we have seen above, the boundary between the black and the light-brown populations is accepted by some as somewhere in the middle between the Fly River and Redscar Bay. The main differences between the residents of the northwest and the southeast of British New Guinea lie, above all, in their outward form and appearance, but they are also differentiated by their habits, weapons, language, and the treatment of their wives. The

Papuan of southeastern New Guinea has often been compared with the Samoan, yet he ranks behind the latter both in stature and physical strength and in intellectual abilities. In a similar manner the Papuan of the northwest may be compared with his brother in the southeast. Even the difference in the climatic and local conditions between the northwest and southeast of the Protectorate may affect the diversity of the people here and there — in the southeast a hilly, undulating coastal landscape with good harbours and a relatively good climate, and in the northwest, on the other hand, those swampy and marshy regions with their unhealthy, swamp air and their damp fever-ridden climate. Here on the low banks, overhanging the water, the mangrove is dominant; there, the slender sky-piercing coconut palm, and this character of the region transfers only too easily to its inhabitants. A large part of the population in the west is a sluggish, indolent class of people at the lowest cultural plane; and even if we find pockets of good settlements in the north-west with a fresh, cheerful population, these are merely exceptions. A large part of the population in the northwest leads a nomadic life, wandering restlessly from place to place, hardly ever attaining a level of culture and prosperity. For the population in the west, apart from the dark skin shade, the small head, long nose and low forehead are characteristic. Their hair is woolly and curly and often shaved off at the front. Their ears are often unusually elongated due to the weight of ornaments attached to them, because often the most varied objects hang both from the pierced rim of the ear and the ear lobes. [275] Not uncommonly more like fifty thin discs are worn in one ear as a pendant; now and then they are decorated round the edges with pretty wickerwork. Strings of dog's teeth are a common ear pendant here, and in the ears of mourners in some places you see cords of whitish seed kernels worn as jewellery.

Men wear a 15–20 cm wide body belt made of thin, yet hard, bark, usually painted red. This belt is covered, as a rule, with finely-braided plants of split bamboo; for the rest, the men wear the genital band, women the skirt. The leaves of the sago palm provide the material for the latter. The Papuan dandy here likes to decorate his ankles with a pair of plaited narrow ruffs or frills, and tie their torso in as tightly as possible. A characteristic ornament is found among the natives on the Morehead River: a peg is pulled through the nose, and a bird's claw is attached to each end of this peg, pointing towards the eyes. Twisted threads are wrapped around the claws, pulled through the ear holes, and tied together at the back of the head. Small mussel shells are attached to the twine, as decoration. Finger rings of wallaby fur or turtle shell are also very popular. We encounter a quite remarkable and unaesthetic custom in the west, in several districts near the Dutch border. Human body parts, which can belong only to the male sex, are fastened, in a dried-out state, to a band around the neck, and are worn on the chest. In the east this 'jewel' is replaced by the corresponding part of the little kangaroo (MacGregor, 1897:47).

A decoration of the body that we rarely encountered in German New Guinea, and only in the southeast of British New Guinea, is tattooing. In British New Guinea this art often gives the impression of being sprayed, because of its lack of symmetry; it usually covers face, trunk, arms and legs. In certain regions people believed that they could recognize characters in the various drawings, so very reminiscent of the impressions of hieroglyphs. Tattooing [276] is undertaken even in childhood; girls of four to five have already had their faces tattooed. The face is always the first to be decorated in this manner, then, at the age of six to seven come the armpits; then the arms and the lower abdomen. The girls' legs are tattooed at the age of twelve years, and only when they are ready for marriage are their genitalia tattooed. In some areas, the completion of a girl's tattooing is an occasion for feasting, during which those tattooed, accompanied by the beating of the great village drums, are brought, unclothed, before the assembled people on the platform of the assembly house (Finsch, 1885:29). Among individual tribes, for example the Motu people, tattooing has a special significance. The women there tend to tattoo their legs, in order to honour friends; the area below the eyes for a departure: when, for example, a brother or a sister leaves the

house; neck and chest to please the married couple, and so on (Chalmers, 1887:165). Tattooing of men and boys is less common; this involves only the face, arms, and chest.

The Hula people on Hood Bay have brought the greatest craftsmanship to tattooing in British New Guinea; each individual pattern has is particular name, and people go to much trouble to create the prettiest pattern possible for tattooing the girls, because the more handsome and artistic is the girl's tattoo, the higher is the purchase price for marriage. As we do through toiletry, in Hula they seek to make conquests through beautiful tattooing patterns. Married women tattoo themselves less frequently; among them, neck bands or breast chains are favoured as pleasing patterns. In some districts, tattooing is unknown in the east — among the Koiari-Kabadi and Dura tribes on Redscar Bay; the Owen Stanley Mountains, and Milne Bay. It is practised only roughly in the Mount Yule region, and in the far north-east on Dyke-Ackland Bay and on Collingwood Bay. On the other hand, painting of the face and body is generally widespread. However, it is limited usually to a few red or black stripes on the face. Red clay is used for red colouring, [277] usually to draw a ring around the eyes and strokes across the cheeks. Manganese or iron ore is used for the black colour. The ore is rubbed on the forehead, and then the blackened finger is passed over the nose, forehead and cheeks.

Finally, the masks that are put on for dance festivals also belong among decoration in British New Guinea. These are usually four-foot-high masks whose frontal aspect almost always represents the form of a reptile, fish, or bird. The material used to make masks is a lighter type of wood, often bamboo, from which the frame is made; fibre or wickerwork forms the upper part, which is wrapped in bast fibre and painted usually white, red, or black. Among them we also find masks in British New Guinea which (for example in Motu-Motu) are so heavy that several people have to hold them and support them: these masks can be up to twenty feet tall.

b. Housing, household items, work tools

All natives of British New Guinea, without exception, have dwellings, and build themselves houses for permanent residence; also many tribes in the swampy regions of the west lead a nomadic life, and though they are readily prepared to dismantle their huts, they soon rebuild them elsewhere. Likewise, the sedentary inhabitants in the east of New Guinea are often forced, by war or food shortages, to change their place of settlement. So far, no tribe has been encountered sleeping on the bare earth or in caves, like so many other peoples at a low cultural level. The material for building their houses is provided by the jungle. Stones and clay are not used anywhere for house construction. In some areas in the east and west (Yule Island) we found two-foot-high, elongated, divan-like rest places with and without backrests, made from flat stones, situated in the centre of the village for the general use of the villagers. The dwellings that in most parts of the country have earned the name "houses", are constructed in many different ways. As a rule these are pole dwellings, built on land as well as over the water: in the latter case, here and there they are in the form of inverted canoes; they often have [278] two floors. Virtually every house has a large or small verandah. In the Mekeo district in recent times people have used station houses as a model of house construction, and these houses could today be the most perfect in the British Protectorate. On the other hand, the most incomplete is the housing of the natives in the Legoa district in the south of the country, and the largest house in British New Guinea is that of the Jabuda tribe on the Fly estuary. In general the dwellings, since they are built from unhewn wood, do not give a very clean impression. If the settlements are in the water, they usually comprise a number of pole houses, usually odd in number or, more rarely, two rows; in the latter case a broad space is left between the two rows as a roadway. There is no trace of symmetry in a village, the houses are

sometimes far apart, at other times closer together, and often so close that you can spring very easily from the platform of one house to the next.

If the villages are laid out on land, they usually consist of two rows with a wide path between, for walking, playing, or working. You usually find a large free space in the middle of every settlement, where the assembly house stands. The piles on which the houses are built have an average height of three-quarters to one metre. The decking consists of planks laid roughly side by side and tied to the piles with rattan. Of the four walls, the side walls are usually longer than the front and rear walls. The roof usually has an obtuse angle and tends to overhang in front. As in German New Guinea the stairs here are replaced by a tree trunk leaning against the house, sufficiently wide that the natives can clamber up without difficulty. In the front, an opening without a door serves as an entry, and at the back of the house there is usually a section cut out to let in light and air. On the other hand, there are no window openings.

Constructing a house is usually carried out communally by the relatives of those who intend to have a family. Certain ceremonies are observed with this; in particular sacrifices are made to the spirits of the dead as soon as [279] the centre post of the house is put in place. Vegetable food and, if available, animal food are set out on the ground for them, and the spirits are requested to take good care of the house, so that it is always full of good things and does not blow over in the first gust of wind (Chalmers and Gill, 1885:24).

In the extreme northeast of the British Protectorate, on the Mambare and Kumusi Rivers the houses on piles are built in an elliptical shape; the side walls are filled in with leaves or grass and the roof is covered with palm fronds. The best tree houses in British New Guinea are found on the Musa River in the village of Gewadarru (Report, 1895:22). On the slopes of Mount Scratchley where the coconut is rare, the roofs of the houses, which are on poles two to three metres off the ground, are covered in pandanus leaves. In Collingwood Bay the one-metre-high walls of the houses are filled in with coconut leaves. The roofs are very low and also covered with leaves; and no way do they give protection against the heavy rain in that region. On high rocks in Goodenough Bay you often see little huts built like chalets, which the natives climb up to on easily retractable ladders (Finsch, 1888:240). These houses are equipped with weapons for defence purposes and are probably not permanently occupied. In Rawdon Bay and the eastern corner of Collingwood Bay the houses are quite meager and poor; and just as unsightly in Milne Bay. Here, not uncommonly you come across tree houses in the highest branches and in treetops, often fifteen to twenty metres up, as for example in the village of Higibu. There is a certain skill involved in building a house so high up, to defy the winds. In Bentley Bay, in the southernmost end of Goodenough Bay, bamboo is the building material for houses. As usual, the roofs are covered with grass, or palm leaves. In the village of Merani, on Cloudy Bay, houses are surrounded by palisades eight metres long and three quarters of a metre apart, which are interconnected by overlaid cross bars. The fence has four openings. The houses here are four metres high, and at a height of one metre from the floor there is a platform from which a ladder leads to the second floor of the house (Thompson, 1892:34). [280]

Among the cleanest houses in British New Guinea are those of the Motu tribe; they stand on high, very uneven poles as thick as an arm. The four corner posts, which extend almost to the ceiling, are not much stronger than the others, which rise only up to the floor. The wood for the poles is usually ironwood (mangrove), which is excellently preserved in water. The rafters are made of any wood. Often old canoe planks are used as floorboards, otherwise they use unhewn beams from the coconut palm, or boards from a tree known only to the natives, that is easily split. The walls, as well as the roofing are of reed grass, pandanus, or sago palm leaves.

A ladder leads to the covered anterooms of the first floor, and from there a smaller ladder leads to the upper part of the house. The side facing the water is usually the front of the house. All of these houses have virtually no decoration at all. Bunches of leaves are fastened to the gable in front, sometimes also the tail of a fish in memory of a good catch. Pieces of tree bark joined into

one piece, replace the door, but these close the entrance only at night. We find similar houses, although more impoverished, among the inland tribes of Koitapu and further westward in Hall Sound. Tree houses are also used as dwellings among the former, but are probably inhabited only during times of war. These are constructed about fifteen metres up in the treetops, and are reached by the inhabitants with extraordinary dexterity. Southeast of Port Moresby, on the slopes of the Astrolabe Mountains tree houses are commonly found in the villages. Weaker tribes, such as the Weiburi and Keile, who live in constant fear of attack by their strong neighbouring tribes, take refuge in such dwellings at dizzying heights. The Weiburi used to live a mile to the east of their present site, a mile from the coast. However, pursued by their neighbours, they withdrew further into the interior and built a new 'home' on the banks of a small river among big trees, with eleven tree houses in the highest branches. On ladders whose rungs are about thirty-five centimetres long and fifty centimetres apart they climb up the thirty metres to their dwellings, which they occupy permanently, leaving only to reprovision themselves. Not [281] uncommonly the trunk of a tree passes right through a house built around it. Even four houses have been erected in the branches of one big tree in the territory of the Seme people, who have had much to endure from the warlike Mannkuro and Garia people. From that, we can get an idea of the enormous size of these giants of the primeval forest. The Lese tribe has already been reduced to six men and ten women, who live in five tree houses and one on the ground. The Koiari tribe erects all of its houses in trees or on high cliffs, so that these edifices serve at the same time as fortresses (see Plate 21). In view of the varying terrain, the poles that support these dwellings are of different heights. The walls and floorboards are made of split bamboo and the roofing material is reed-like grass. The villages of Tupuselei and Kapakapa south of Motu, and the large village of Hula lying on Hood Bay are stable, in the water (see Plate 24). To the south is Kerepunu, again built completely on land. This latter village consists of several larger groups of houses. Here we find side streets branching off the main streets. Small plantings of bananas and coconut palms separate the various settlement groups. Hula too comprises several groups of houses and, in this respect, it forms one of the other water pole-villages. The houses in Kerepunu are open at the sides; they have a relatively high roof and a wide platform, from which a ladder leads to the floor space. The roofs are covered with grass or pandanus leaves. Among the biggest villages in the British Protectorate is Maupa in the Aroma district: it includes possibly 250 houses and more than 1,000 inhabitants. Nine main streets pass through the village, with several side streets running off them. The houses are ten metres long and eight to ten metres high, but not as wide as usual and with the gable fronts built onto one another. Both gable sides of the roof run vertically and in their lateral lines they form small pointed arches that are decorated. The flooring consists of broad, thick planks; the roof is covered with boards. In these houses you can at least stand upright. A ladder leads from the opening in the front, serving as the door, to the floor space; thick, notched tree trunks serve as steps to the [282] first floor (Finsch, 1887). The village is kept very clean by the women and swept with brooms, which they themselves make from the ribs of the lateral fibres of the coconut palm leaf. Very rarely do you see dirt in Papuan villages, certainly native superstition deters them from it.

In Redscar Bay, as already mentioned, Manumanu, with about a hundred houses, is the main village. The houses are two-storied, and differ little from those already described. On the broad, first-floor platform of the houses, you usually see several family members sitting. A low door leads from the platform into the living room, and using a small outside ladder you climb up to a second floor, which is also provided with a small verandah. In Manumanu you not uncommonly find double-houses, which are built so closely together that they seem to form a single house (Gill, 1875:248).

Plate 23

Native huts in British, southeast New Guinea

West of Manumanu the system of house construction soon changes. While in the east they shelter only a single family, in the west they have barrack-like dwellings that provide space for several families. Between Yule Island (146° 20' E.) and the Fly mouth (143° E.) they have huge "men's houses" and alongside, special small houses for women and children. In the Aird delta the houses are fifteen to a hundred metres long, and up to twenty-five metres high. They rest on poles or hewn tree trunks. They are built in the shape of a wedge and are provided with a platform. The houses are higher in front than in the rear (Thompson, 1892:84). In the Fly area both sexes dwell together in the houses, indeed one house often shelters the entire population of a village. For example, the settlement of Odagositia has only one single house, which, admittedly, is 175 metres long and 10 metres wide (Report, 1889:21). There, decorations are rarely found on the houses. Here and there carvings are found on the door post, representing human figures or crocodiles such as, for example, among the Mannetti people on the left bank at the mouth of the Fly. More often the assembly houses are decorated. [283]

On the upper Fly and Palmer rivers the houses rest on poles about four metres high, some of which are tree trunks knocked together. The houses are built on two floors: the lower one for the men, the upper one for the women. The shape of the house resembles a canoe; six window openings are made in the upper storey. Both the upper and lower stories have a door, with ladders leading to them (Thompson, 1892:121). Among the Mauat people on the Katan River there are special youths' and girls' houses, all built on poles. Generally the houses are so spacious there, that fifty to sixty people can live in them. The platform offers space for a dozen people; from there an opening leads into the interior. Against the walls in the interior there are narrow sleeping beds made of bamboo; in the corners small racks for firewood. At night the wood is removed, and the frame serves as a sleeping arrangement for the small children. No sleeping furniture is provided for the older children; they sleep in the youths' or girls' houses. Here older people keep watch, and keep the young folk in order.

In all the houses we find a simple fireplace made of clay, which is situated more towards the back of the interior. In the east this consists of a simple wooden frame, one metre long and equally wide, full of sand and stones, in which a fire is constantly maintained. A small rack is placed above the fire, to store food. Other supplies are stored in big clay pots standing against the walls. We do not find any storage facilities at all in houses in the east; also, headrests are totally unknown as sleeping pillows. In the village of Nauea in the Mekeo district there are hanging mats woven from bast fibre, quite like ours, and there are also mats plaited from palm fronds, which, however are not used as sleeping mats (Lindt, 1887:126). The Paihana people on the Hilda River usually carry them with them, to use when sitting down. In the Maipua district you often find human skulls in the houses as decoration, otherwise there are virtually no utensils.

Some implements, as well as fruit, often lie outside on the platform; here and there weapons hang only on the walls. Around [284] the fireplace stand pots of water, coconut shells as ladles, and wooden and clay bowls. The best items are stored in bags. Less valuable things lie on racks, which are attached above, to the ceiling. These include nets, grass skirts, drums, bags, poorer weapons, tapa skirts, pots, all mixed in together. Here and there you may also see an illustration from *Pearson's Weekly* or from *Harper's New Monthly Magazine* that have, by chance, strayed from the dwelling of a European from the administration station into these sooty dens. These dwellings are still far from cosy or comfortable. Even if it is not plainly unclean in these dwellings, the European who was led by curiosity or duty to enter such a house, will be driven out again by the damp air and the unpleasant odour. In the east the upper attic space, which is used at the same time as a dining room, serves as a sleeping space; it is not uncommon to find a smoked pig next to supplies of taro, yams, bananas, sago and the like, depending on what the season and the region brings forth.

c) Employment, Hunting, Fishing

We do not find any great difference in the way of employment between the natives of Kaiser-Wilhelmsland and British New Guinea; work is divided in the latter in the same way as in the former, so that the main work in the garden and in the house falls on the woman, while the man is more likely to enjoy his pleasures. Hunting and fishing are carried out by the men in the British Protectorate more than in German New Guinea. They catch small fish in a very peculiar manner: when a shoal of them bustle around a sandbank near the shore, three Papuans position themselves nearby, initially to observe; two of them are armed with bamboo canes with a ball attached to one end while the third holds a plaited catching device with an opening on one side. Should the fish shoal together in one corner of the shallows, the two men with the bamboo canes approach very carefully from two [285] different sides and by coming together, with their canes, in an otuse angle behind the shoal, herd the fish towards the beach and into the catching apparatus of the third man.

Turtle fishing is carried out in the following manner (MacFarlane, 1888:122). If a turtle is spotted on the surface, they approach the spot very quietly in the canoe. One of the men binds a cord around his arm and slides noiselessly into the water. He bides his time until the moment when the turtle dives. Immediately he launches himself forwards and throws himself on it getting both arms around it, seeking to get it under control. This presents an amusing picture to the people in the canoe: man and turtle battling in the water, the one trying to get away and the other trying to hold on to it. Once he is sure that he has it secure, he gives a previously-agreed signal to his friends in the canoe. Then one of them leaps in quickly and attaches the same cord that had been wrapped around the arm of the first man to one of the turtle's feet and at a further signal man and turtle are hauled into the canoe by his comrades, who had been holding the other end of the line.

In the northeast and south of New Guinea the Papuans, when they go fishing, still use catamarans (floats), and in Bentley Bay they have quite useful fish traps. Fish weirs in the form of a long trellis, like those in Dutch New Guinea, are used by the natives on the Aird River, and probably elsewhere as well. The natives of Orangery Bay are good fishermen. The natives on Bartle Bay have a special sign that they use to indicate to others that they have reserved a spot on the riverbank for fishing: they knot grass together and lay it down at the place on the bank where they intend to fish. Similar to staking claims on a particular site on the river bank for fishing, it is done also on the ocean reefs for catching dugong. Old Hula, at the eastern tip of Hood Bay is known far and wide for its fish market, where the natives of neighbouring tribes stream in. The Papuans of the villages of Seinkata and Oburaka [286] on the Trobriand Islands are known also as good fishermen. The dugong is a whale-like mammal, which occurs quite frequently in the coastal waters of New Guinea, but is very difficult to catch. Its flesh is exceptionally tasty; the fangs and the oily fat of the animal are also not to be despised. Its skin is soft and durable. At any rate seal hunting is not a worthwhile industry. According to the legend of the Motu people the animal has only recently materialized (Romilly, 1889:21 *et seq.*) A long time ago the Motu came from further west, Taurama, where they lived mainly from fishing. They came to Hanuabada, near Port Moresby. There they built houses and continued their life as fishermen. The land already belonged to another, stronger tribe, the Koitapus. This tribe practised, and even now still exercises great influence over this entire region because magical powers are attributed to it, such as the art of making rain, a connection with the sun and the moon, etc. Nevertheless, the Koitapus tolerated the settlements of the Motu people, but to a certain extent laid a tribute on them: always to supply them with sufficient fish. The Motu still have to fulfill this obligation to the letter, today. In fact they also have very strong nets for dugong-hunting and also for turtle-catching. Each time they go fishing, they keep to a certain diet and abstain from their wives.

Hunting is an occupation more of the mountain-dwellers than of the people on the coast. The former have not only beautifully-braided wide nets, but also traps, for birding. Wallaby-

hunting is conducted mostly at night with the help of dogs. Nets are set up at certain points; with great skill the animals are driven into the nets, with the help of dogs, and then speared. Pigs are also driven into nets and caught in traps as well, and then kept in big holding pens until they are slaughtered. The muzzles of the dogs are rubbed with the leaf of a certain plant, so that they may get a better hold of the pigs (Chalmers, 1887:181). In the mountains, for example on the slopes of Mounts Knutsford, Musgrave and Scratchley, on flat ground you often came across huts [287] that appear to have been occupied by the natives only temporarily, when they came to hunt at those altitudes. One of these houses on the foothills of Mount Musgrave was about eight metres long, three metres wide, and two metres high. The roof was covered with the leaves of a dwarf pandanus species. In another hunting hut, found on Mount Scratchley three fire-places were found, buried half a metre deep in the ground (Annual Report, 1888/89, pp. 69, 75).

In British New Guinea too, the Papuan carries out heavy, long-lasting work most reluctantly; he leaves that to the women. At the most, he sets himself to carving and chiselling on houses, canoes and weapons, or he occasionally carries out repairs on the huts or canoes; bigger tasks such as felling trees, clearing and fencing gardens, building canoes, and the like are usually done together.

In British New Guinea a major branch of men's occupation is canoe-building. Their vessels (Plate 27) range from the simplest type up to the veritable artistry of Papuan shipbuilding. On a few roughly-joined-up bamboo canes the natives of the river areas set sail across their streams. To undertake longer river trips a hollowed-out, barely-hewn tree trunk suffices. When these are compared with the great war vessels and trading canoes of the coastal-dwellers, one is astonished at the craftsmanship of these tribes, who can bring it to such a level of achievement with their rough tools, for the instruments that the natives use are of the most primitive kind here too in British New Guinea. They are made of stone, lava, shell, wood or bone. The stone axes comprise a wooden handle made from a knee-shaped piece of branch. Fixed to this handle by means of a fine plaiting of split rattan is a stone blade about fifteen centimetres long, fashioned usually from pebbles or basalt. It is rounded at the sides and has a broad blade that runs transversely to the direction of the handle. The Kerepunu people have a stone axe that is provided with a reversible blade, and is adjustable. In Collingwood and Cloudy Bays the natives produce the blades of their stone axes from nephrite rock. On Holincote Bay [288] the blades are of basalt. Finally, some time ago, on the d'Entrecasteaux Islands, MacGregor discovered a large quartz deposit, which was used by the natives to make their axes. Contrary to the general rule, the natives on the Mambare River do not bind the blade to the handle, but pierce the blade with a small stone that is roughly the shape of a cartridge, and push the handle into the artistically-created and adapted opening (Annual Reports, 1893, p.70; 1896, p.237). As for other tools, the natives of British New Guinea have drills made of pebbles, and beaters that they use for softening *tapa*; they use a stone hammer for crushing and grinding hard objects, and a sharp nail serves as a chisel. Very many natives already know the value of iron, but do not yet understand how to use it. Universally, the main working tool is the stone axe, used not only to fell and hew trees to make their canoes but also to decorate them.

We find the most primitive vessels in British New Guinea on the coast between the German border and East Cape. As we have already seen, rafts or catamarans are the natives' means of transport on the river and the sea. The natives in the northwest, on the Chester and Baxter Rivers, do have canoes, but very simply made, without outriggers. Here the vessels are seven to twelve metres long, but on the other hand, little over a metre wide, void of all decoration and propelled by means of a paddle. They are so heavy and awkward that they can be used in only very good weather. Sails are not known here. Larger canoes are paddled by two men standing forward in the canoe; if it is a battle at sea, one man stands forward, the other at the stern of the canoe. The coastal tribes between the Morehead and Saibai Rivers have canoes with double outriggers; however these are as small as the Javanese canoes. The canoes taper forwards into a very sharp

prow; they are made in one piece, and somewhat decorated with cassowary feathers. Between the Fly and Mabudauan they are fitted with sails, although they are small and undecorated. The canoes on the Fly estuary carry small sails, but they are rough and unattractive. Between the Fly and the Purari the [289] natives are extraordinarily skilful paddlers. On the upper Fly the canoes are seven to ten metres long, and between one- and one and a third metres wide, with a broad, projecting, flat, front section tapering into a sharp prow, without an outrigger — dangerous vessels! And yet you see four to six men at the same time in these frail canoes, and wonder how they can keep their balance. The paddles are four metres long and the blades are fifty centimetres long and twenty-eight centimetres wide. On the Palmer River, close to the German border, the paddles are made from tree bark, and in the form that we see in Aden (MacGregor, 1897:54). Here, as along the entire coastal stretch as far as the eastern end of the Gulf of Papua the natives are unfamiliar with sails. The canoes used by the Gulf tribes east of the Fly are without outriggers but are far stronger and more beautifully-built than on the Fly itself. They are so low that in front they are almost level with the water. During the voyage, a boy squatting in the middle of the canoe is constantly busy bailing water out with a coconut shell.

The vessels that we find among the Mekeo people are nearly as wide fore and aft as they are in the middle. This gives the canoes a clumsy, awkward appearance. Here almost along the entire east coast the canoes are made from a single tree trunk and are fitted with outriggers and sails. The trading vessels of the Motu and Elema people are made from very strong tree trunks; in their construction, it is less about the appearance and more about the durability and the greatest possible load-bearing capacity. As we have already seen, on extensive trading voyages a number of these canoes are tied together, often as many as fourteen of them. As a rule these *lakatois* are sixteen metres long and eight metres wide. They carry two large matting sails and hold fifty men plus the cargo, which not uncommonly comprises thirty tonnes of sago. On the Wanigara River there are stands of trees that provide a very good, soft wood, which is excellent for the construction of these trading canoes. The village of Keapara, at the river mouth, about twelve miles east of Port Moresby is known as the canoe-yard. Usually two men work on a canoe: one of them works on the inside with his stone axe while the other trims the outside with a hammer-like implement. [290]

In the Aroma district and further east, canoe construction is different from what has been described. On both sides of the vessel boards are placed over the rough tree trunk; a second tree trunk serves as a mast and its roots serve to fasten it securely in place. Between Yule Island and the Fly you not uncommonly find canoes with a half-moon-shaped sail, which looks very pleasing. The natives on Milne Bay have quite simple canoes without sail or outrigger. The most striking contrast to these are the splendid war vessels of the natives between South Cape and Taupota, north of Chads Bay. They are very big, but narrow, and fitted with an outrigger that is longer than the canoe itself. There are seats for thirty paddlers in these, and a few human skulls are attached as decoration. Like the Tami people in Kaiser-Wilhelmsland, some coastal tribes also make artistic canoe models for sale and trade.

In the d'Entrecasteaux Islands, especially on Fergusson Island, they have similar canoes to those in Chads Bay. On the Trobriand Islands to the northeast however, again there are very simple vessels. On Holincote Bay the natives have quite good vessels but no sails. In the Louisiade Islands, Pannies and Murua provide quite good vessels; their inhabitants, like the Keapara people, also make canoes for others, and these then sell them on (MacGregor, 1897:56). The canoes of the Rossel Islanders are not equipped for sails but otherwise they are very useful. They are seven to ten metres long, and very narrow, as usual. The price of a good canoe varies; it depends on time and demand. Earlier, in the south, the price was thirty to forty stone axes. In any case, the canoes of the islanders and the coastal inhabitants are worth much more than the simple canoes of the river-dwellers in the interior. Here in the interior the rivers are bridged in places, which we have never found so far in Kaiser-Wilhelmsland. For example, in the Maipua district both parts of the village

of Mipor, which is situated on both banks of the Aiwei, are connected by an artistic suspension bridge made of bamboo and rattan.

There are good log bridges at Kiwai, and a suspension bridge similar to the one in the Maipua district. MacGregor crossed the latter [291] in 1889 during his expedition to the Owen Stanley Mountains. It is twenty-three to twenty-seven metres long, and a masterpiece of Papuan technology. On the left bank the bridge is supported by a strong banyan tree resting on a bare rock about seven metres above the water surface. The tree on the other side did not seem strong enough to the builders, because they used very strong rattan to tie it to a strong stake rammed into the ground. From the banyan tree on the left bank the bridge starts out at a height of sixteen metres then drops to four or five metres in the middle of the river before climbing to seven metres on the other side. The bridge material is rattan. About fifteen rattan staves form the framework; some of them are bound together, because they do not extend from one bank to the other. Two rattan staves form the decking, with two others laid on top apparently later, since the lower two had already seemed to be in need of repair. Suitable approaches and stairways are set in place on both sides of the bridge. The latter itself is sufficiently strong and durable to take the weight of five people at a time (British New Guinea Report, 1888/89:61).

Generally, the Papuans of British New Guinea know how to plait nets, mats and baskets. For the latter they use pandanus leaves in particular. They also make appealing belts and variously-patterned pouches and bracelets made of coconut fibre and braiding. The Kerepunu people, like the Tami people in Kaiser-Wilhelmsland, have, to some extent, a patent on the production of fine, shell work, especially of pretty neckbands. A poor cripple in Kerepunu is said to have invented the art of making such collars many years ago or, according to the legend, a spirit is said to appeared to him by night and to have demonstrated the manufacture of such necklaces to the poor cripple as a compensation for his lameness.

Incised carving has received too little outstanding importance in British New Guinea; here and there we hear for example of the Suau natives being skilful carvers, with their paddles and weapons decorated with tasteful carvings, and their ability to lovingly carve small fish. Furthermore, in the vicinity of Port Moresby, in Redscar Bay, in Elema, in Bentley [292] and Rawdon Bays we encounter natives who also know how to carve. Furthermore, the arrows that the natives in the west of British New Guinea use are prettily and tastefully decorated with carving at their tips; however, the natives of British New Guinea remain behind their brothers in the rest of New Guinea in the art of carving and incising.

Pottery is solely women's work in the British Protectorate also. In the interior, certainly also in the west (west of the Vailala River) pottery is produced either not at all or only to a limited extent. Here cooking dishes and eating dishes are made from coconut shells or wood. In the east women are involved in pottery mainly in the Engineer group; the Papuan women on Redscar Bay, in Motu, on Caution Bay, and Lealea, Delema, and Hall Sound. Good clay products also come from the Louisiade Islands. Without question, the small Teste Island is the *κεραμῖκος* of southeastern New Guinea: it provides absolutely superb raw material to the women for their pottery-making. Here they shape the clay vessels with their hands, and not with a beater and a stone as in Bilibili in Kaiser-Wilhelmsland. In the Motu-Motu area the women collect the raw material from deep mud pits near their villages.

When the clay is on site, it is first laid out for drying, crushed, mixed with fine sand, and moistened with salt water to soften it. Then the pots are shaped, laid out to dry, and fired over large fires. Finally, the finished vessels are stained with mangrove bark. The upper, vertical band of the pots exhibits various patterns, which serve as trademarks. Each woman has her own special trademark.

c. Birth, childhood, family life

The amusing element in most Papuan villages is the children. Unfortunately, in some areas of British New Guinea there is a dearth of children, which has something unnatural about it, and suggests that probably in many cases the foetus is aborted or that many newborn infants are killed soon after birth. The Resident Magistrate of eastern [293] British New Guinea emphasizes explicitly in his Report for 1894 that, for example, the inhabitants of the village of Tubetum do not shy away from infanticide. There, as a rule, the newborn children are strangled by the father himself after birth, in order to be relieved of the burdensome task of raising them. Daughters may be spared, because with their marriage they bring something for their father (MacGregor, 1897:45). Not infrequently the missionaries succeed in saving the innocent victims from the cruelty of their own father, but often they are too late. Abortion is as commonplace in the west as in the east; they use various herbs. Generally, they do not like to raise more than two children. Every Papuan woman has an abhorrence of the birth of twins, because she would be mocked by the other women in the village and compared with a bitch-dog, which gives birth to half a dozen young; or she is suspected of an immoral life-change, for according to Papuan belief, the birth of twins is a consequence of adultery. Others blame the man, and say that he has broken a vow or *tabu* (see Section 3 below), and therefore his wife is punished with twins.

During the time of pregnancy, certain tribes prescribe a special diet to the women. For example, the Motu-Motu people forbid the enjoyment of taro, yams, and sweet potatoes to pregnant women. In the west of the Protectorate, women who are breast-feeding are not allowed to drink coconut milk, and all spicy foods are prohibited. Among the Motu-Motu the husband, too, has to avoid certain foods during his wife's pregnancy, such as crocodile flesh and fish, in case the child gets crooked legs, in their belief (Chalmers, 1887:162). The women, with warm hands, undertake manipulation of the newborn baby's head, to give it a pretty, round shape. Immediately after the birth the mother usually bathes in the sea, without any further assistance. The husband sees his wife and child only a long time after the birth; during this period he spends his time in the assembly [294] house and the wives of his friends cook for him. In Suau it is even worse for him; he has to fast for a certain period after the birth of his child and he is *tabu*, isolated from all contact. Among the Motu, the husband, should the wife's birth pains be violent, tends to sit close to her and removes his armbands, which, according to the people's belief, should alleviate the woman's pain. Once the child has come into the world, he puts his armbands back on.

After the birth, the child has to be protected in the beginning, lest it accept the "ash-grey *Iwaiaberi*", a spirit that steals children. People in the west of the Protectorate tell one another that he is attracted by the crying of the newborns, and then uses the opportunity, when the babies are unsupervised, of taking them with him. Here the natives firmly believe, and sometimes people from the protection troop want to have been in the vicinity of the station when children were playing in the neighbourhood, for this spirit to have become visible (Annual Report, 1894/95:p.57). The whole myth may have been conceived by the natives only to frighten children, in the same way that we tend to intimidate our children with the "black man" and the chimney sweep.

Man and woman can live together only once the first child is able to walk; if a second child is born before this happens, then the couple are left alone by their fellow villagers. The child is put to the breast immediately after the mother's bath, and is weaned very late, and not until the child has learned to run. Among the Papuans there are no special formalities at the time of birth; only the birth of a first child gives occasion for a great feast, put on by the grandparents of the child. However, among the Motu-Motu people only the 'old ladies' of the village take part; the relatives of the newborn are, strangely, shut out.

Name-giving varies greatly among the individual tribes. Some bestow abstract names upon the children: they are called “wood”, “hunger”, “thirst”, or they are named after certain plants such as “yams”, “taro”, “bananas” etc. The Motu-Motu people name them after animals, such as “wallaby”, “pig”, “dog” (Chalmers, 1887:162 *et seq.*) [295]

Children go about naked until the fourth year, then the girls are given a skirt; the boys a few years later, usually not before the eighth year. When the latter have reached the age of 14–15 years, in the southeast they receive the *tikini*, a band drawn about their loins in the form of a T; once this is worn they are considered adults. When the boy is six years old, his nasal septum is perforated and the indispensable nasal ornament is presented to him. According to the belief of the natives, he must have this in order, after death, to enter a land where there is an abundance of food and luxury. The Motu-Motu call this place *Tageani*, other tribes call it something else again. Should a child whose nasal septum is not pierced die, they do not neglect to carry out this procedure on the little corpse, for fear that entry into the “good land” after death might be closed to him. In the infancy stages, before the child can run, the mother carries it either on her back usually in a basket, or on her chest in a bast fibre cloth. In the southeast, where women wear the *lami* skirt, the infants, when they are a little bigger, stand on the edge of this protruding garment and stick to it by wrapping their little arms around their mother’s neck.

Most Papuan children can be prettily named, and understandably at the same time. Even in the far west, where the natives have a terribly ugly appearance, the children, with their soft tender skin, their peculiarly beautiful eyes, and their friendly expression make a most charming impression. They usually jump around so cheerfully and look so happy that you would say that they are lacking for nothing. As in Kaiser-Wilhelmsland, here too the surviving children, especially in their very early years, are raised by their parents, who allow them the greatest freedom, while they exhibit a very early maturity of understanding. This is precisely the reason why they are left very much to themselves soon after their first years of childhood. Should the mother not take the child when she goes to work in the garden, or she has to do something for the household, the father likes to look after the child in the meantime. He carries it round the house wrapped in a mat, and caresses his cheek against that of his offpring, starting a one-sided conversation with him. And the little citizen of the world is intelligent enough [296] not to scream, and to make the Papuan father’s babysitting as tolerable as possible. Moreover, among Papuan children the first years of childhood are spent in troubled joy and pleasure; in play and dance, because Papuan boys take part early in the men’s festivals and dances while the girls are welcomed in to household tasks and accompany their mothers to the gardens. Yet the boy, too, is not inactive: he helps his father to plait nets and baskets, carves with him, accompanies his father when he goes fishing and hunting, and learns how to make weapons.

As in Kaiser-Wilhelmsland, the temporary exchange of children takes place here too. The natives happily take their sub-adult children with them on their trading trips and then leave them there for two years with the friendly tribe. Then the hosts give their children into care for an equal period of time. As we have already seen in Kaiser-Wilhelmsland, this exchange aims to give the children the opportunity to learn the language of the foreign tribe. Before the boys reach manhood, they have to conceal themselves in the bush, hidden from all eyes, and they are dependent on hunting and their own resourcefulness to find food. If in doing so they pay less attention to mine and yours than they should, it is overlooked by the older villagers, who remember that they, too, were once in a similar situation. In the Fly River region the festival of attaining manhood is held every March or April. At this time all women and children are not allowed to leave their houses.

Circumcision occurs more frequently in the east than in the west. It is handled in the same way as in Kaiser-Wilhelmsland but without the same ceremonies. Among the girls, the completion of the tattooing of their bodies is a sign of their maturity. Before they are able to marry, the girls, too, have to spend time in seclusion, which, among certain tribes, such as in the Kabadi district,

Plate 24

(Original in the posession of His Majesty the Emperor and King) (Lindt)

Village scene in Kalo, with the church in the background

can extend over two years. During this time they may not leave their house; but once the time of release occurs, a great feast is prepared, the girls are presented to the assembled people in all their tattooed glory, and all the young men of the neighbourhood are invited. The great feast takes place, and after the feast the dancing begins. [297] On this day the girls enjoy the greatest freedom and have the right to choose their suitors; the maid gives a betel nut to the chosen one.

Until their marriage the girls usually enjoy sexual freedom; not infrequently immorality begins in their childhood when they are playing with other children in the village and are spoiled by bad examples. A Papuan girl would probably never go with a white man of her own volition. Any profits made from the relationship would not remain hers, but would soon fall into the hands of her father, uncle, or brother; also, she prefers her tribal companions for her dalliances. Nevertheless, it happens that, under the influence of her relatives, she succumbs to Europeans, who pay a price to them; the girl's reputation for such behaviour does not suffer any damage in the eyes of the natives. After marriage she becomes the property of her husband who, especially in the west, reacts towards her according to his mood; and if she is then virtuous, it is usually only out of fear of her husband. In spite of everything, love matches are not uncommon among the Papuans in British New Guinea.

In the West the woman often takes the initiative when she wants to marry; if she has her eye on a certain person whom she wants as a husband, she sends her relatives to him with a request to visit her. Very often such a marriage then leads to a second, in which the sister of the bridegroom is given to the brother of the bride as an exchange for the loss of the latter (Annual Report, 1892/93:35). An actual engagement in our sense, that is, that the future married couple themselves make a commitment to each other, does not take place in British New Guinea as a forerunner to the marriage. In the east children are sometimes destined as future husband and wife: an agreement that later also usually leads to marriage. This is, as a rule, the same as the possibility of paying the father of the girl what he asks for her.

Some tribes marry only among themselves; others again have marriage with neighbouring tribes; the natives of other tribes again may take women only from outside. For surrendering her, the father of the bride receives a purchase price or gift from the bridegroom. Dowries also figure here and [298] there, for example in Banarua. In the southeast the bride-price is regulated according to tradition. As we have seen. it consists of all kinds of jewellery: firstly the shell armband, the so-called *toia*; likewise a mussel plate made of mother-of-pearl shell (*mairi*); a headdress made of a string of wallaby teeth (*totoma*) that is in use especially among the Koiaris; and one made from small molluscs (*Cassidula*) (Finsch, 1885:17). In the west sago cakes, and in the east pigs, form a major part of the purchase price. As a rule, a higher price is required for widows than for young girls, because they already know how to run a household. In Motu for example the following price was paid for a widow: three pigs, assorted skirts, eighteen armbands, two large pots of sago, a boar's tusk, and also a seal, and turtle meat. Most tribes do not like to hear the word purchase price with reference to marriage. They say that what the groom gives to the father of the bride is merely a voluntary gift, to which no one is compelled. The Mekeo people maintain above all that the word "price" be avoided in marriage negotiation. On Rossel Island the purchase price for a wife is so great that the future husband, although he is supported in the payment by all his relatives, must spend an awfully long time paying this off and remains in the debt of his wife's relatives for almost all of his life. Polygamy is customary throughout the entire British Protectorate, and depends on whether the husband is in a position to pay the price for several wives, but sometimes also on the consent of the other wives. This latter is seldom denied, at least in the west, in view of the fact that division of labour enters into it.

In the east the women's situation is much more tolerable than in the west, and again, on the coast much better than in the interior. There, until not long ago, women were subjected to the cruellest mistreatment for the slightest thing, even speared, without anyone coming to their aid.

Chalmers, the well-known missionary, tried a few years ago to extricate a woman from such a fate, among the Koiaris. “Why are you getting involved?” an old Koiari woman challenged him. “Don’t you know that Koiari men can kill their wives [299] when they feel like it, and straight away take another wife in place of the one killed?” Today, such conditions no longer exist, thanks to the greater influence of the missionaries and the energetic intervention of the Administration. On the whole, family life among the Papuans is far better and more leisurely than among other savage peoples. In the west, however, the woman is often still a beast of burden, but the situation is different in the east where she is shown more respect, and is often even influential in the dealings of her husband, (Pitcairn, 1891).

So far, special marriage ceremonies have not been observed in British New Guinea (MacGregor, 1897). If the daughters have not been given at an early stage, then this takes place at the latest when they have reached sexual maturity, and is characterized externally by the tattooing of their body being completed and the period of their seclusion being behind them. If a Papuan father has not eaten roast pig for a long time, or he is missing sago, or something else that his heart desires, it may well happen that he decides to give his daughter away to a suitor who can provide him with what he needs. But anyone who can make a good down-payment is welcome. From this moment onwards the future husband has a certain right to his future. In part she already belongs to him, in other part, to others whom she may like. This is the side of Papuan morality that is the least appealing to us. The girl will always reject any reproaches made by her intended against her infidelity with the words: “You have not finished paying for me yet”, and on the other hand the relatives of the girl already allow congress of the young people through the consideration that a down-payment has already been made. The Administration has not yet been able to decide to intervene in these unclean, old-fashioned abuses. It has become easier to adopt a Decree that punishes nuptial adultery by the natives with a long prison sentence. This regulation is not so often offended against; for, as in the rest of New Guinea the Papuan woman, after final payment of the purchase price or the agreed or expected so-called [300] gift, usually makes a spotless marriage. Among themselves, the Papuans punish adultery with death. The husband does not intervene because he believes that his marriage has been violated — that concept is foreign to him; no, he bludgeons the seducer of his wife because he has interfered with his property. He will always do this if he esteems his wife. If this were not the case, he would be satisfied with a fine on the part of the seducer.

As an outward visible sign that a woman is married, it is usual for her hair to be cut short; in Maiva on the other hand the women just let their hair grow long. In other tribes, the fact that the woman’s face is tattooed is a sign that she is no longer single. In some parts of the British Protectorate there is also said to be marriage by abduction, although this kind of union is rare, and usually gives rise to feuds in the event that the husband is not in a position to pay retrospectively. In most tribes nowadays the price arrangement of the marriage goes ahead peacefully, and not uncommonly, the relatives of the wife give a corresponding, reciprocal gift, on their behalf, to the relatives of the husband.

The *impedimenta matrimoniae* are based merely on too close a relationship. Siblings and close relatives through the father, in other tribes close relatives through the mother, are not allowed to marry. The remarriage of a widow depends upon the consent of the brother of the deceased husband, or of his family, to whom the widow, to some extent, falls under an item of inheritance. As a rule the price for the widow is also therefore higher, because the husband’s heirs want to enrich themselves as much as possible through the purchase price of the widow of the brother. If the widow has no children, it is customary that after the death of her husband she returns to her family, but also in this case the purchase price for her remarriage falls to the man’s relatives. If there were children, they usually went to the brother of the father who, together with the brother of the mother, carried out supervision and guardianship of the children. Some tribes in the east, such

as the Naria people, expressly forbid the remarriage of the widow. The children are, as a rule, related only to the mother; but they belong sometimes to the tribe of the latter, and sometimes to the tribe [301] of the father. The land that belongs to a woman from outside the tribe at the time of her marriage does not go to the husband under any circumstances. Only in the case where a husband from outside settles into his wife's tribe and cultivates a piece of uncultivated land there, with the consent of the members of the tribe, then that land belongs to him and his family and, not uncommonly, during his lifetime he divides it up in favour of his children, who accept this inheritance as an attestation of bequest.

As a rule the married couple reside in the east of the British Protectorate; with the husband's parents if they do not yet have their own house after the marriage.

On the wedding night, if one can speak of such a thing, husband and wife sleep together, otherwise the husband sleeps in the meeting house and occasionally seeks his wife only at night. In the west the young married couple are given a compartment in the great family dwelling houses, and in the areas around the Gulf of Papua where there are men's and women's houses, the men and women live apart and, in order to fulfill their matrimonial duty, make a rendezvous in the forest at a certain time. If a woman marries outside the tribe she retains her family name and any children remain in the mother's family as a rule, even when they merge into the father's tribe. The living together of husband and wife rarely gives occasion for quarreling and strife; on the other hand there is a lack of tenderness between married couples. Even after a long separation the reunion takes place without a warm welcome. If, for example, the husband comes home after a long trading journey, he gives attention to his wife, the married couple regard each other joyfully, but that is all. The husband then turns immediately to the other men while the wife goes about her household affairs as if her husband had not gone away. Illegitimate children do occur; if the brother of an unwed girl who has given birth, is married, he frequently takes in his sister's child as his own, but there is always ugly talk in the village, and abortion is therefore not uncommon (Annual Report 1895/1896:15). Should a woman leave her husband to marry another, which does not often happen, her relatives [302] have to pay compensation to the relatives of her husband. In Maiva the custom prevails that, after adultery committed by husband or wife, the coconut trees belonging to the guilty party are cut down by the relatives of the other party (Lindt, 1887:131). This infuriating habit has been prevented in recent times by regulation concerning the obligation of the natives to plant and nurture coconut palms. In cases where the marriage is broken by the adultery of one party, the children usually belong to the husband. The wife initially takes one or other, especially if the children are still small, and the father claims them later, although more often than not they themselves go running to him. The Motu-Motu provide an exception: the wife retains all the children, particularly when the guilt of splitting-up rests with the husband. By the words "Did you suffer pain during the birth?" the wife dismisses the husband's claim on the return of the children.

Sodomy is said to be a vice in the west, especially around the Katau River; less so in the east. Sexually-transmitted diseases are not all too common; syphilis has occurred in isolated cases only over the last twenty years.

e. Sickness, death, and burial

The natives suffer greatly from skin diseases, both in the west and the east but mainly the northeast, affecting approximately fifty per cent of all the natives of British New Guinea. The Papuans report that these eruptions occur at some times of the year more frequently than at others, and may therefore be related to the enjoyment of certain fruits that tend to be eaten only at certain times during the year. At heart, every Papuan ascribes these burdensome skin diseases, like every illness of a milder or more serous nature, to outside influence, i.e. sorcery from outside. Large numbers of the Fly River population are affected by elephantiasis. The natives suffer fevers just as

often as Europeans, even though they are milder attacks. They suffer from ulcers more than the Europeans. Child mortality, which [303] is generally low, is very high in the northeast, for instance in Tubi-Tubi. Smallpox must have maintained its pernicious foothold in British New Guinea in various outbreaks, as clearly seen in older or more recent pockmarks on the faces of natives in the east and west. According to McFarlane, a major smallpox epidemic raged in British New Guinea in 1871, claiming thousands. For the first time since the establishment of administration in British New Guinea, in 1898 dysentery raged in a frightful manner, mainly in the east of the Protectorate. Interestingly, there are natives in the British Protectorate who, on the outbreak of such epidemics, make quarantine arrangements: among them, for example, the Mowatta people on the Katau River who, at the time of epidemics build special huts about a mile from the village, where they place the patients until their complete recovery. A widespread childhood disease in British New Guinea is a fungoid rash known by the Polynesians as *Tona* (also framboesia or yaws). Over the further course of this disease the initial rashes join into severe ulcers, from which the affected persons, especially children, often die. Leprosy occurs particularly in the east. Eye diseases almost never occur.

Since every disease arises from sorcery, according to Papuan belief, it must disappear again through sorcery: sitting in the body of the patient is the spirit of the disease; it is aroused, whereupon it departs from the body. Such a driving-out of the spirit, with shrieks and whistles and punching in the air, has something extraordinarily comical about it, even more so when enacted with the serious, indeed reverent, faces of the bystanders. Even so, the latter firmly believe that through such manipulative treatment the spirit of the deceased, which has established itself in the body of the suffering member of the tribe, will be driven out. Or, they try to draw out the disease-causing agent in the patient's body by sorcery and formulaic incantations. Also offerings that are brought to the spirits should eliminate the illness. In the case of a slight malaise, they are offered taro, yams, bananas and other vegetarian dishes. [304] If the disease is alarming, a pig is sacrificed; at the same time all the sins are confessed, for example, bananas were taken from a foreign plot without giving the gods their share. The following words are used: "Take the pig, you gods, and drive away the disease!"

Just as sorcerers are asked to expel diseases, they are also consulted to impose diseases, and even death, on others whom one does not wish well; and here the sorcerer uses the same small items as the sorcerers in the rest of New Guinea: he knows how to procure hair and nails from the victim, or food scraps. As a rule, the victim soon learns, through a third party, that he has been bewitched, and his imagination that his death is imminent makes him really ill and frailer by the day, until finally he takes no more food and slowly fades away. The relatives then turn against the sorcerer, or rather, against the person who, in their opinion, through mediation of the sorcerer, has caused the death of their relative. According to the beliefs of the Motu people it is the spirit Koitapu who brings the illness into the human body in the form of a stone or a fire (*Caita*); in their opinion, only very old men and women die a natural death. Among the Motu-Motu, young women must be on their guard against a mountain spirit, *Kanisu*; for as often as they speak evil about him he is swiftly there, steals their skirts and washes them in the mountain spring on Mount Yule. In the water-soaked garments that are returned to them is a concealed disease germ, which brings death to the evil women (Chalmers, 1887:162 *et seq*.).

Burial ceremonies and funeral ceremonies in British New Guinea are, on the whole, the same as in Kaiser-Wilhelmsland, although the Administration has already adopted a regulation concerning the latter. On threat of punishment, the natives are forbidden to bury their dead other than in graveyards established outside the villages. Thus today we only rarely encounter, either deep in the interior or on outlying islands of the Protectorate, burials either within the house itself or in the vicinity, or even corpses laid out on open platforms or suspended from trees. [305] At first the natives were very reluctant to let go of their old ways of burial. Implementation of the new regulation underwent particular difficulty in the Milne Bay area, where, out of superstitious fear,

the natives did not want to give up their old form of burial (Annual Report, 1894/1895:16); it was even more difficult for the administration to enforce its ordinance on the St Joseph River, for the natives there were curiously supported by the Catholic Mission in their efforts to bury their dear departed inside their houses or in their vicinity, the same as before. While the offering of piety towards the deceased by the survivors may seem quite praiseworthy and definitely have its place, especially among uncultivated people, this is not the case where it gets out of hand to the point of endangering the health and lives of the survivors.

The blackening of the face and the rest of the body as a sign of mourning in British New Guinea is more customary in the east than in the west; in the Aroma region you can see even small children running around painted black, on such occasions. As a further sign of mourning, widows on the St Joseph River put on a net covering the entire body, and do not throw it away until it falls off their body. On the death of their husband they also blacken their faces and bodies with charcoal, and do not wash during the entire period of mourning. The natives on Teste Island wear a "fringed bib" of finely-woven little cords (Finsch, 1888:283). Natives on Hood Bay in mourning put on a belt consisting of three rows of strung seeds; attached to the belt are tassels two to three inches long, made from the same material, with small shells fastened on the ends. The women of the village of Hula when in mourning wear a headdress of red seeds cut in half and strung like glass beads; through their nose they pull a cord extending to both ears, strung on either side with seeds in the same manner. Women in Maupa, and women of the Koiari tribe put on earrings when in mourning; and at the ends of them they fasten black kernels of fruit, which shine like pearls; they also wear a band of the same fruit kernels on the upper arm and the forearm, and the women in particular wear on their shaven foreheads [306] a round ring of seeds cut in half. A different style of ear pendant, consisting of cords of whitish seeds, forms part of the mourning jewellery in Hall Sound (Finsch, 1885:20). During the mourning period the natives on the Gulf of Papua dress from neck to knees in a dense wickerwork, so that they can barely move forwards, in addition to wearing the above-mentioned neck cords and painting face and body black (MacGregor, 1897:49).

The death of a relative deeply affects the family life of the Papuans, but above all the life of the widow. Her grief is always the most obvious. Should this grief sometimes be not so sincere or profound, a Papuan widow will never display this to the outside world because in such cases the suspicion would immediately run wild that the widow had brought about the death of her husband through sorcery.

3. Religious and social conditions

An actual religious concept, as we have already seen from the description of the situation in Kaiser-Wilhelmsland, has completely departed from the Papuans of New Guinea. Fear of the spirits of the dead leads them, to some extent, to superstitious veneration of them, and out of fear of their evil deeds they seek to appease these evil spirits by all sorts of sacrifices. The Papuans of British New Guinea believe that every human being is composed of body and mind, but during sleep the latter leaves the body, and, at death, departs from it never to return. When they awaken a sleeping man they do not do so in a harsh manner, but cautiously and gradually, so that the spirit has enough time to return to his dwelling. On the passing of a relative people offer sacrifices to the deceased so that he may go from there at peace with the survivors, and bring no harm upon them. It has been maintained that the [307] Papuans of British New Guinea know only evil spirits (Romilly, 1889; MacGregor, 1897) which must be reconciled and appeased at all times in order to keep them well-disposed towards the survivors. However there are also tribes that venerate good spirits, such as the Motu people (Chalmers, 1895:162 *et seq.*). The natives believe that their deceased relatives in the spirit kingdom continue to live in the same manner as before, and in

particular have the ability to visit their former home both by day and by night. When they enter this world the spirits have to go through a somewhat embarrassing purification: they are dessicated on a grill over a slow-burning fire until they are ethereal, and light enough to be able to fly around in the air. Thereby, however, they have earned their right to a place in the spirit land, where they meet all their deceased friends, where food is abundant, and where there is never famine. The Papuans in British New Guinea make no distinction whether a person has been good or evil during his lifetime; they know only a life after death, and that is in happiness and glory. According to native belief, the place where the deceased arrive varies among individual tribes. The natives on Murray Island set the spirit world in the interior of the earth, others in the bush, others again in the mountains, in the sea, and in the sky. The Motu people call it *Tauru*; the Dahuni people *Dindim*; the Motu-Motu natives again *Lavan*; these last locate it in the west. As the natives believe, friends stand ready at the gate of the spirit world to receive and welcome the newcomers (Chalmers, 1895:162 *et seq.*). While the spirits are feared on the one hand, and sacrifices are offered to them for this reason, on the other hand they are scolded and actually attacked. Apart from their outward form, the voice of the spirits of the departed is also different from that before, much lighter and thinner.

As an outward sign of ancestor worship, in many Papuan houses in British New Guinea you find skulls of the dead hanging up, others preserve thumb bones, fingernails or hair of the departed family members as reliques. [308]

Representations of male and female figures that are found outside the entrance to the meeting houses and sometimes inside them, especially in the Elema and Nama districts, may be related to ancestor worship. In these districts the meeting houses are called *Elamo*; on the St Joseph River further east *Marea*; and along the entire coast from Port Moresby to South Cape the natives call them *Dubu*, *Lubu*, or *Rubu*. In this area the houses have already shrunk to bare platforms resting on three or four high, carved poles, also considered holy places. The single room of the *elamo* and *marea* serves the men as a sleeping place, a living area, meeting place and as accommodation for strangers. In front of these houses are platforms on which pigs and dogs are slaughtered on festive occasions, and meals are taken. Of course the entry of women into the *elamo*, *marea*, and *dubu* is strictly prohibited; on the posts of the last you often see human skulls fastened as a decoration. Weapons and captured trophies also hang from them, while these are stored in the interior of the *elamo* and *marea*. The youths are brought into the *marea* or *elamo* as soon as they have grown out of childhood; this usually takes place amidst solemn ceremonies. At the conclusion of these, they receive the *maro* (*mar* in Kaiser-Wilhelmsland), the belt of a man. Before being taken into the *marea* the boys have to undergo a period of seclusion, in the meeting house itself. They must not leave it during this period so as not to be seen by any female. Before this period starts, the Motu people cut the youths' hair very short, and do not let them leave the meeting house until their hair has grown quite long again.

When this time has come, with great celebration, including the slaughter of pigs, they are presented to the village. Among the Elema people the boys are allowed to see the veiled figures of Semese or Hiovaki displayed in the *elamo*; revealed to their eyes for the first time. According to the natives' belief, Semese is the founder of the *dubu*, the *elamo* and so on, and all meeting houses are consecrated to him. Therefore, the Elema people in particular [309] show great veneration of him, and the women tend to call upon him when a husband wants to spend the night with his wife. For the men, so they say, Semese has appointed the large *elamos* for sleeping in (Chalmers, 1895:162 *et seq.*), and for the women the small huts. In the villages in the interior of Kerepunu, they revere a great spirit, Palaku-Baru, who lives in the mountains. A special place is dedicated to his worship. The Nama people rely heavily on Kurian, a female spirit that lives in the sea, and on Harai, the star spirit that lives in the sky; for them the spirit of the earth is Emara. Kurian and Harai are the progenitors of the Area tribe. Once when Harai came down from the heavens, he heard

singing coming from a cave on the seashore; when he came closer he discovered the sea-woman, Kurian. He bred with her, and their son was the founder of the Area people (Chalmers, 1895:81). Another figure to whom offerings are frequently made in Elema is the spirit Taparu. According to the belief of Elema natives he causes the lightning, Semese the rain, and the sun belongs to a female deity called Kewakuku. Her head, as it is most often depicted, is that of a fat goose, and a wickerwork frame represents the body.

Thus, among the Papuans, in addition to a belief in spirits there is at the same time a reverence for the forces of nature. The Nama people, for example, speak the word "sun" only in a whisper, and always look upwards when they do so. According to Chalmers, when the Motu people on their way home towards evening observe that the sun is going down, they tend to address it directly: "Sun, do not hasten so, wait until I am home and the bacon of the next pig shall be yours." Others worship fire as a kind of deity; others again the thunder, lightning, wind, and rain, as we have seen. It is assumed by the Motu people that the southeast tradewind has two doors, while the northwest has six of them. If the doors are closed the wind cannot get out; but as soon as just one of them is open, the wind blows. They call the north wind *Matana*. They are not afraid of earthquakes; on the contrary, they welcome them for they bring good harvests, in their opinion. According to the tale by the Orokolo people, fire came originally from the interior of the earth, but then [310] went out again, so that the people went totally without this element. The Orokolo saga continues: later, it came to earth in the following way: in earlier times, childbirth among the Orokolo people tended to take place, as a rule, by the violent incision that we call a "caesarian section", during which the mother usually lost her life. A young Papuan mother who valued her life, one evening when the birth of her child was near, implored her husband to spare her, not to cut her, and to take her to her parents. He did so, and that same night the birth of a little boy took place naturally. After the woman had bathed the following morning, she was freezing terribly and wished for some warmth. Behold, a piece of fire immediately fell down from the heavens, and her father fed it with dry wood. It took hold, and soon it spread such a great heat that the woman quickly warmed up. Soon the wondrous birth was heard of in the village, and the falling of the fire from the heavens. Everyone came to lay gifts at the feet of the newborn, with the request for some fire. Since then the fire has never gone out in Orokolo. The Motu people regard Hiovaki as the creator of land and sea. The first man and the first woman are said to have sprung from the earth, and they are said to have had three sons, Koiari, Koitapu, and Motu. According to the beliefs of the Motu people, heaven and earth were formerly bound together. The earth-dwellers did not have to work, but only to spread a mat in front of the door of heaven, and to utter a prayer. Immediately the sky opened and everything that they wished for, they received from there. Through the fault of women this glorious life came to an abrupt end: a man had two wives, and when after a time he favoured one over the other he flew into such a rage over the constant scenes of jealousy that he severed the narrow stick that bound the sky and the earth, with an axe, and in this way the inhabitants of the earth and he himself were condemned to work.

The Legoa people worship the moon and the deity Eaboahme sitting there. The Keile people regard her as a daughter of the earth and the wife of the sun, although the details of this marriage are wrapped in a certain darkness. The [311] birthplace of the moon is transposed into the village of Keile itself, roughly four geographical miles southeast of Port Moresby. As the legend tells us, the curiosity of a Keile man caused this birth to happen too early, and the fact that the earth is not constantly illuminated is attributed to his fault. The natives like to think about the origin and context of natural forces, and seek to study their effects in their own way. They are particularly interested in things that seem to them to be related to the supernatural. For example, as MacGregor reports, a Port Moresby native once asked a doctor who had chloroformed a patient, after he had closely observed the procedure, if the doctor had also killed the heart like the rest of the body, whether he would then be able to bring the man back to life. Much of what the natives do

not understand about the Europeans, they put into context with the spirits themselves, about whom they have great fear. Should a European, for example a trader, die among them, be it a natural or an involuntary death, the corpse is not buried but, if it is not eaten, it is thrown into the water so that the waves may take it away as quickly as possible, and the mighty spirit of the deceased not disturb the village. If, on the other hand, one of their people should die at the hands of the Europeans without his death being recompensed by a compensation, then the skull of a white man must take the place of the skull of the deceased, otherwise the spirit of the deceased will not be at peace. For example, some years ago several people from Bakera (Duau) answered the request of a Greek trader, to catch trepang for him. During a storm, his ship was lost with all hands. Some time later another trader came into their area, and they had no compunction about murdering him as penance and compensation for the souls of those drowned. Unfortunately, such cases are not isolated, even today.

Superstition among the natives is an evil that both the missions and the administration find hard to combat. In the west there are certain places that are shunned by the natives because, as they say, there are spirits there. Included among such places until a short time ago was Daru, the headquarters of the administration in the west. When the station was moved there from Mabudauan, a large proportion of the natives could not be persuaded to follow the Europeans. Only after a whole year [312] had passed, without a death occurring on the station, which is exceptionally well located, did the local natives allow themselves to work on the station and the Mabudauan men to be recruited as police-soldiers. Until recently, a large fig tree grew near Daru; the natives claimed that a type of female spirit named Buhere-buhere had chosen it as their seat. One of the great branches of the tree was a hindrance to traffic and was to be cut down. Only two men on the entire station dared to carry out the order, and once they had actually cut off the branch of the spirit tree the other men were firmly convinced that something terrible would happen to them. When nothing happened, people resorted to the assumption that the *buhere-buhere* could do nothing against the Administration and its organs. On the Marbudauan hill, according to native belief, the female spirit Wanwa carried out her mischief, and unfailingly proclaimed the death of a member of the Kadawa or Fureture tribe by clapping two big stones together. When the station manager had those stones broken up, it was said that the power of the spirit was not yet broken but it would only choose another place of residence (Annual Report, 1894/1895:57).

A weapon that the natives have most recently played into the Administration's hands, against their own superstition, is the sorcerers, who, through their unfair manipulations and intrigues, continually sow discord and dissatisfaction among the natives. The latter have recognized this for themselves in recent times, and when an incident occurs, they give the Administration the names of the sorcerers who have caused the dissatisfaction. This has made it easier for the authority to apply a regulation governing sorcery (Regulation II, Annual Report, 1893/1894:58). Harmless silly tricks, or rather native shenanigans that are similarly connected with their superstitions, for example possessing talismans and the like, are not affected by this Regulation. One would be cutting too deeply into the flesh of the natives, if one wanted to take away everything relating to their superstition all at once. The natives in the Elema district [313] for example carry a type of tree resin (*tomana*) in their chest pouches, with which they smear themselves, in order to attract the dugong into their nets. The Papuans of another district in the British Protectorate use a fragrant plant (*tohni*) to protect themselves against snake bites. In addition there are love-, hunting-, and fishing talismans, as in the rest of New Guinea. The Wailala people even operate a thriving trade with them. Like the Koitapu they seem to have a reputation as sorcerers. However, they do not treat their gods very kindly, for, as Chalmers records, they once had their Semese, the rain-bearer, which always stood in front of their meeting house, simply jailed during a great feast when they wanted to have beautiful weather, and let it out again only when the feast had come to an end, (Chalmers, 1885:152).

Totemism (Annual Report, 1895/1896:40) exists in various forms in the south of the British Protectorate, from the Louisiade Islands as far as Orangery Bay. However, there are traces of it only in the east of British New Guinea, but apparently none at all in the west. The symbol of the totem is an animal from which the ancestors of the person in question has descended. This animal is then sacred to him, and he must kill anyone who harms it. People who have the same totem may not marry each other, even if the woman or girl is from a tribe far away. Infringements against totem customs are mercilessly and bloodily avenged. As a rule, the children have the same totem as their mother. Some have the dolphin as their totem, others the turtle, others again the snake, the cassowary or another bird. The universal totem of the Masingara tribe is the alligator.

Tabu customs (Annual Reports, 1892/1893:38; and 1894/1895:54 *et seq.*) are also not lacking in New Guinea.They are found wherever Polynesian influences have been felt. In the west the expression *tabu*, which is known to be sanctity, inviolability, holiness of certain persons, objects, or places, as well as the places themselves, is replaced by the word *sabi*. *Sabi*, in relation to one another are, for example, persons who turn out to be too close in [314] kinship, or for other reasons, to be married. Such people are identified with Emapura people who are *sabi* within their tribe but cease to be as soon as they have gone beyond their tribal boundary. Hence, the application of *sabi* does not extend beyond the tribe. Furthermore, *sabi* is the designation of the parents of his wife and their relatives for the husband, for as long as he remains within the tribal area and, likewise for the wife, the relatives of her husband. The names of the younger brothers or sisters of the husband or wife do not fall under this *sabi*. Anyone who has offended the *sabi*, must make atonement to the person whom he has offended. This custom is so firmly adhered to, that men who have violated the *sabi* and have not yet atoned for it, are forbidden entry to the meeting house; they are, to a certain extent, ostracized. It is quite common in the west to make private property, such as trees, *sabi*. This is done both to be able to harvest the fruit for an imminent feast and to avoid theft or premature removal of immature fruit.

The natives in the west tend not to protect their gardens by the *sabi*; they try to prevent thefts of field crops by other means. Small pegs are put into the ground of the path leading to the garden; they are easily covered with earth and, since they are concealed, they wound the feet of anyone walking along the path. The thief who has visited the garden secretly soon betrays his lameness. On the other hand, paths and tracks leading to *sabi* sites are frequently announced as such by putting a dry coconut onto a pole, which is planted into the ground in front of the path or track that is out of bounds. If natives on their journey come near such a place, which is visible from a distance as *sabi*, they act very quietly; nobody says a word, and they avoid stepping onto the site so as not to violate the *sabi*. Transgression of the *sabi* might, in native belief, attract illness at least. Drinking water or access to rivers is never *sabi* or *tabu*, nor is anything else which, by its nature or tribal use, is common property, such as firewood, dances, singing, or stories. Many people not uncommonly apply a *tabu* to their very food, or have it transferred from their ancestors. Most commonly in such [315] cases, crocodiles, cassowaries, and dogs are *tabu*. A custom belonging here is that on the death of a relative or friend it is recommended never more to touch the food that the deceased has touched or consumed; however, such vows are usually applied no longer than the next season, that is, until the wind blows in the opposite direction. More conscientious men, such as Duani, the chief of Mawatta, remain faithful to the vow for life (Annual Report, 1894/1895:56).

In some districts, such as Dobu, there were until recently two kinds of *tabu* that were imposed by the sorcerer and were time-honoured: the former was a specific, inherited right of the village sorcerer, but is now abolished by the already-mentioned Ordinance against evil sorcery. In order to ensure a large supply for feasts, people in most areas are familiar with the garden *tabu*. The *tabu* relating to the naming with the name of a deceased person has already been mentioned;

Plate 25

Original in possesion of His Majesty the Kaiser (Lindt)

Chief's house in Tupuselei (near Port Moresby)

likewise that in some regions there is a *tabu* preventing men from taking a wife from a 'foreign' tribe. The *tabu* that prevents women and children from entering the meeting house is, of course, strictly observed here in British New Guinea as well.

The meeting houses do not differ in any particular way from those in Kaiser-Wilhelmsland: as there, they are found in every village. In these meeting houses all of the more important matters of the village are discussed in a general assembly; the voice of one is just as important as the voice of another, although, as a rule, the head of the family has the say, that is, the head of a group of sons, daughters, uncles, cousins, nieces, etc. The chiefs rarely have a decisive voice; earlier, their power and influence would have been much greater, as the natives themselves love to say, especially in central British New Guinea. For example the Motu people maintain that in ancient times they did not have many different chiefs in a tribe, but only one tribal chief who decided over war and peace. Boi Vagi, named in England's declaration of patronage over the land, delivered by the English commander to the high chief of the Motu tribe, which then numbered fifty chiefs at the time, would have been from the dynasty of the great [316] chief's family, as Chalmers records. The chiefs are said to have had great influence earlier; Boi Vagi's influence wuld have extended not merely over the Motu tribe but beyond it. However, since his death the chiefs of the Motu tribe no longer have such power. Yet it is established that in the east of the British Protectorate the chiefs have much more say than in the west, where their reputation is very often equal to zero. Powerful chiefs, such as those found among the Elema-, Maiwa-, Motu-, Mekeo-, Sarua-, Gosoru-, Kalo-, and Aroma tribes, living in certain villages such as Maupa, Wabaraba, Kaware, Mara, Hula, Kerepunu, Vailala are of course supported by the administration in every possible way, because an intelligent, energetic leader, who is sympathetic to the administration, outweighs hundreds of natives, even if they are otherwise willing and docile. On some bigger and smaller islands, such as Yule, Murray, and the Trobriand Islands, individual Papuans have likewise come to the attention for their reputation and influence as chiefs.

Chiefly succession is best regulated in the Aroma district. The late chief is succeeded by his sister's son, without any disturbance of the peace. This 'sideways-succession' is also common among other tribes in the east: the Motu tribe, in the Trobriand Islands, and on Bentley Bay. There, Komodon of Polutona is mentioned as the pre-eminent man of influence; in Milne Bay: Yacoba of Mita; in Kalo: Saul; in Quaipo: Makopolo; in Gosaro: Kaboka; in Maupa: Guapana; in Vailala: Ipai; in Delana (Hall Sound): Lavou; and in the Aroma district: Koapena. Semon (1896:386) reports that the influence of this man is strong enough to protect the life and property of the missionaries settled there, from the natives. On the other hand he does not shy away from avenging injustices done to members of his tribe, in blood. For example, several years ago seven Chinese settled in the village of Maupa indecently assaulted several native women; they were all killed by Koapena and their heads were mounted on the posts of the village meeting house for show and decoration.

Nevertheless it is often difficult in the villages to find the leading "master", as the natives who understand English tend to call the [317] so-called chief, for neither does he stand out from the others by special clothing and jewellery nor does he live in a better house as a rule, and finally, he is not given special respect or tribute by the villagers. In the west, we find among the Badu and Masingara tribes on Parama (Bampton Island), and Yasa, men who, at most, bear the name "chief". At times these authorities are built upon bravery, strength, prudence, or age, but usually it is possessions, that assist an ordinary Papuan to the dignity of a chief. Similar to the rest of New Guinea, such a chief has hardly any privileges over the others, except for individual privileges in the purchase of pigs, and minor honours. Chiefs in the Trobriand Islands enjoy a special distinction; they are carried on the shoulders of their people alternately on their visits from village to village. There too, however, their reputation is more of an external one. In war, sometimes the

chiefs appear to be leaders, however jealousy and dislike by the villagers, and the chiefs' fear of the revenge of their people contribute to their reducing their position soon after the end of a raid.

It is also fear which keeps the village communities together. Fear and anxiety about common enemies, make the individual families that live together more tightly-knit as a village community. The head of the family generally has respect and considerable influence within it, and the various family heads within the village advise and decide together on the welfare of the community. The village communities then quickly enlarge, and can number up to a thousand inhabitants; usually they are smaller, often only ten-men-strong and, given their weakness, in constant fear of the others. However, as soon as they feel stronger they become easily arrogant and cocky, and this often leads to the consolidation of several small neighbouring communities with common language and customs into one tribe. Thus tribal groupings are formed: loosely-connected unions without leadership or solid structure, for freedom and equality are also prevalent in British New Guinea among Papuan villages and tribes. Our greatest philosophers are of the opinion that the most perfect and ideal social condition is that of self-government and the preservation of individual [318] freedom. Here in New Guinea we have a form of such an Ideal State, where the people, unrestricted rulers of land and soil, with low demands, and in their sense of independence, without real leaders and laws, no one person more 'propertied' than the others, govern themselves. Here we find no distinction between rich and poor, no opposition of high and low, scholars and uninformed, gentlemen and servants, no struggle for existence, and no race after acquisitions. Yet, whoever transgresses against his neighbour will feel his fist or fall by his hand unless friends mediate; if a fellow villager or tribal member is wronged from outside, the village or, more rarely, the tribal cooperative, stands up for him. The great love and faithful cohension among family members lead to a blood feud, which happens as an immediate consequence of blood relatives' moral duty. It is not lust for murder, but affection towards relatives that leads to the bloody action. Rarely does a village community, as such, turn against one of its own, he has to be a notorious murderer or a thief. Minor thefts rarely occur, but those who are driven by greed do not shrink from murder.

In general, the natives of British New Guinea are much more blood-thirsty and warlike than the natives of our Protectorate. On the other hand, their weapons do not differ much from those of the Papuans in Kaiser-Wilhelmsland. A weapon unique to British New Guinea is the so-called "man-catcher" which, as far as its outward appearance is concerned, is a pretty work of art. The weapon is said to have been invented by the natives of Hood Bay, and consists of a hoop fastened to a pole, with a nail-like, pointed wedge at its outer end. When throwing it at the victim, the pursuer has to manipulate the hoop with such dexterity that the pointed wedge remains stuck either in the head or the back of the victim.

In the west of the British Protectorate the principal weapons are the bow and arrow; further eastwards these decline as weapons, while in the east they rarely occur. As a rule the bows are made from bamboo, about 1½ – 2½ metres long, 2 – 3 cm wide in the middle, and about a finger-thickness at the ends. The inner side of the bamboo forms the outside of the bow. The bowstring [319] is made from strips of bamboo or sugar cane; they are ½ – ¾ cm thick. The inside stems are added to the bow by palmwood; the arrow shaft is of cane, the tip of solid palmwood, or sometimes bone or the strong claw of a cassowary. As already noted, these arrows are provided with beautiful carving and variously patterned; the arrow tip is not poisoned, since, as we have seen, it is sometimes bone or cassowary claws often with some flesh remaining, which may add their suppuration to that of the wound. This may be the basis of the myth of poisoning from arrows. The arrows that the natives of the west use in battle are often up to two metres long; smaller arrows are used for shooting fish.

Belonging among a warrior's weapons is the club, usually of heavy ironwood; sometimes the men in the west, when they go into battle, have a sharp, bamboo knife slung on a cord around

Plate 26

Original in the possession of His Majesty the Kaiser (Lindt)

Treehouse in the village of Koiari, British Southeast New Guinea

their shoulders. These knives are usually heirlooms, which pass from the father to the son; they are used to cut off the heads of fallen enemies, and the number of notches carved into the knives tells how many enemies the owner of the knife and his predecessors who owned it, have already slain. In other areas, these notches are cut into spears. Further east the bamboo knife is replaced by a dagger of cassowary bone; it belongs among the weaponry, and is used to kill an enemy at close quarters: as a rule the enemy is stabbed in the neck, above the clavicle (MacGregor, 1897:60). The main weapon in the east is the spear, which is sometimes elegantly decorated. Shields are not found at all in the west of the Protectorate; in the east on the other hand, they are the constant companion of the warriors.

In the interior, in the Owen Stanley Range the natives have both bows and spears as weapons, and on the slopes of Mt Scratchley bows, arrows, and stone clubs. In the northeast of the Protectorate, besides spears the Papuans use stone axes and stone clubs made of basalt; here as almost everywhere in British New Guinea "man-catchers" are used. In the south of the country, besides spears and clubs they not infrequently use slings to hurl stones at the enemy. [320] The bearing of weapons was formerly universal; now, especially in the east where the administration has taken a firm control, the natives know that they are no longer able to take up arms with impunity, but as on the other hand they are aware that they have protection through the Administration, they do not always carry weapons with them.

Apart from running away, other means of defence that the natives favour a lot are tree houses; pallisades that fortify the villages; or rock houses, which are built high above on rock walls. As in the rest of New Guinea, fighting is not an open battle, but from a concealed ambush. Since the Papuans do not have any real battle-leaders, everyone fights more for himself than for the community. In the northeast they like to decorate themselves for battle by wearing masks to terrify the enemy, and to reinforce their own courage they yell a war cry at the beginning of the fight. Whoever kills an enemy in close combat is considered a hero, and in some tribes, as a sign of his bravery he receives the upper jaw of a rhinoceros hornbill, which he attaches to his forehead. Among the Motu people this reward of a hero's jewellery is replaced by a bunch of cockatoo feathers, which the hero wears on his head. The desire to achieve such a badge often leads to bloody feuds between otherwise-friendly villages. Other causes of fights are jealousy, superstition, bloodlust and women. Especially in the south, the women are often the instigators of the fight. They rush at them like Furies, writes Chalmers, if the men do not immediately seem inclined to fulfill their wish of starting a feud; they hurl the men's shields to the ground and hurl stones at the men themselves, berating them as the "biggest cowards in the world" (Chalmers, 1885:73). Quite often lesser causes, often only an insignificant verbal dispute, lead to war and bloodshed.

In addition to those causes, there are even more among the natives in the southeast, especially the Logea tribe near Samarai (Loria, 1895:45 *et seq*.). There it is customary that during the [321] trading of large items: pigs, canoes, and the like, part payments are accepted. If the debtor falls overdue in his payment to the creditor, despite a previous reminder, the creditor simply kills the debtor and then takes what is due to him from the estate, which, of course, does not remain unavenged by the debtor's relatives. Jealousy is also a not infrequent cause of bloodshed among these southern tribes. If, for example, a young Adonis from a neighbouring village comes to visit a friendly village and has the misfortune of the women falling in love with him, then that is reason enough to put an end to the innocent usurper of the hearts of their better halves. At celebrations it often happens that one or other boasts of heroic deeds. Should one person exaggerate once too often, and should a second person dare to cast doubt upon the truth of the stories, the narrator has no qualms about cutting down the offender. Should it happen that two Papuan youths burn with love for the same beauty, and the favoured one boasts of his success with the maiden, this inflames the anger of the rejected youth, and the happy lover falls victim to the jealousy of the other. Often, the mere lust for bloodshed is the occasion for feuds. By murdering

any member of a different village against whom they want to start a fight, they get their opportunity. Another reason is sorcery and everything related to it. For example, it rains heavily for several days in a row. This may perhaps hinder several villagers who are planning to go out hunting or from making some other journey. They are bored at home, become annoyed and, finally, they give vent to their displeasure by ascribing the continual rain to the sorcery of any inhabitant of a different village, to whom they are not well disposed. He has to pay with his head, for its having rained for so long and, of course, the village to which the victim belonged, takes revenge. Finally, family disagreements often lead to one or other family member, who believes himself wronged by one of his relatives, allying himself with the enemies, to put an end to the relative with whom he is in disagreement. After this is done, he feels sorry for his actions, and he himself then turns against the murderers of his blood relatives, to avenge them. [322]

The deadliest offence that a southern Papuan can give to another person is to pronounce the name of his deceased relative; even the slightest allusion to his death is to be avoided, otherwise "his spirit will return"(MacGregor, 1897:79). This custom can lead to the greatest complications. If, for example, a villager is absent from the village for some time, and one of his relatives dies in the meantime, no one will dare to inform him of the loss that has befallen him. He happily comes back home, and reads on the faces of his friends that a death has occurred, but he does not ask about it. No one would answer. He has to look around the mourning circle himself, to see who is missing. Should anyone out of this circle happen to mention the name of the deceased, this insult would soon be bloodily avenged.

Not to be forgotten is covetousness, as a frequent cause of feuds among the natives: two natives may get on well with each other and peaceably go hunting together. On the way they stop to rest. One of them takes his bag from his side to fetch his betel pouch. The other one watches him, and his greedy eyes rest on the handsome lime calabash of his companion. He would like to claim it as his own. A quick decision, he reaches for his club, strikes down the happy owner, and the treasure is his. However he has not considered that he is now the target of the vengeance of the relatives of the one slain, and that his village is now split into two hostile factions because of his misdeed.

Before the Papuans in the southeast of the British Protectorate go into battle, they usually go on a restricted diet. The Legoa people (Loria, 1895, pp. 51 and 52), for example, drink salt water for some time before, in order to breakdown and eliminate fat; they abstain from their wives, and they also avoid meat so as not to gain fat. Among their vegetables they eat ginger to make themselves strong; in order to become trim and fit they burn a [323] plant that they call *gabusihesihehe*, and inhale the smoke that comes off the fire.

Warlike natives in the southeast, besides the Legoa, are the Silasila on Orangery Bay; the Garia, Manuhuro, Babaka, Quaipo and Kalo people on the slopes of the Astrolabe Mountains; those of the Dahumi and Maihu districts on Milne Bay; in the central region the Maiwa and Motu people, and the Maipua and Orokolo tribes. On Freshwater Bay neither the Toaripi nor the Karama people are to be trusted; the former are so murderous and at such a low cultural-level that not long ago they killed a small boy from pure blood-lust. He had gone down to the river to collect water and had got lost. Several years ago the villages of Mowiawi and Hetuari, further up the Heath River, murdered a teacher of the London Missionary Society, stationed there, Tauraki by name, together with his little four-year-old son, and severely wounded the missionary's wife.

There are also tribes and villages in the southeast which, by their untiring lust for feuding, cause much unrest for the Administration. In 1891 on the German–British border a European trader from the Goodenough Islands had been murdered by his own ship's crew: natives whom he had recruited. In 1897 on the Mambare River, the hostile behaviour of the natives had led to the inland administrative station being moved nearer the coast, and again in 1897 the village of Murawawa on Goodenough Bay gave occasion for military intervention on the part of the

Governor. The villages of Kaiboda and Roianai are also hostile towards the administration; and the village of Awaiama on Chads Bay has become infamous for the assassination of Captain Ansell. In the Woodlark Islands too there have been clashes between the Protectorate troops and the natives, who had to be punished for the murder of European traders.

Finally, there are tribes in the west, like the Tagota people on the lower Fly and the Sisiama on the lower Bamu, who tend to override the Koriki in the Purari delta. Nevertheless, the west of New Guinea has not been as warlike as the east for a long time. It has already been mentioned that the Lese and Veiburi people had earlier been exposed to constant attacks by the Garia and Manukuro tribes. The Lese tribe, which is now so [324] shrivelled, was once strong and powerful, and just as bloodthirsty and cruel as its neighbours. Earlier it stood on a war-footing with the Paihana people, who lived much further to the north.

In battle the Papuan shows no compassion, and cruelty has become second nature to him. Among the Maipua people the first man to have bitten off the nose of his opponent, after he has killed him in battle, is considered an absolute hero. If, during a feud, a man does not reach his goal by the direct route, he helps himself by betrayal, and you will probably always find someone in the raiding tribe who, out of greed, or hope of a great reward, or a share of the booty, happily takes on the role of betrayer. If they want to make peace, they send arrows into the enemy village, or shoot them into the air in front of the enemy, or break their arrows. Green branches in their hands indicate the same intention. In very few cases the enemy village is destroyed and a general slaughter takes place. Usually they are satisfied with one or two victims, who are taken home dead or alive. If prisoners are captured in the battle, they are tied up in the canoe and most cruelly mocked and tortured during the journey home. Often these are completely innocent people who have never done anything against their current tormentors. It is up to the relatives of the person whose death was being avenged, whether the prisoners should be killed or whether they should go free. The latter happens usually when there are other victims available, especially those who are killed in battle. If the prisoners remain alive, they are treated well and belong to the family. The fortunate ones who have taken prisoners or who have slain an enemy are especially lauded by the relatives of the one avenged by the expedition, and are rewarded with gifts. However, they must conceal themselves for a time, at least until the corpses of the fallen enemies are eaten, for they must not, as the natives say, “smell blood”. At least this is the custom in the southeast among the Legoa.

Besides this, there are definite signs that cannibalism prevails in the southeast among other Papuan tribes. MacGregor literally says in one of his administrative reports (Annual Report, 1892/1893:35) [325]:

> There has been no cannibalism to contend with in the West, nor it may be said elsewhere. No district is known to the government in which it was customary to eat human flesh.

However Loria, a reliable warder whose portrayals bear the stamp of truth, in his *Notes on the Ancient War Customs of the Natives of Logea and Neighbourhood* (Annual Report, Appendix 8, 1894/1895:51) expresses the information that the Logea people roast and consume the corpses of their slain enemies. The bodies are wrapped in dried coconut leaves and suspended over the fire by a rope attached to a tree. When the rope burns through and the body falls to the ground, they all rush forward with a diabolical howl, quickly grab a knife and cut a piece off the charred body, now quite dirty from lying on the ground. Also, Hugh Hastings Romilly (1889, pp. 57, 60 *et seq.*), who in his capacity as Resident Magistrate both in the eastern and western districts over many years had the opportunity of getting to know manners and customs of the natives, with the words “minority are cannibals” acknowledges that cannibalism still exists today in British New Guinea. He likewise

does not deny that the custom of head-hunting still occurs among the Papuans of the British Protectorate, and he divides the headhunters into different classes (Romilly, 1889:59). He differentiates those who cut off the heads of their enemies after they have killed them in whatever way, and those who go hunting with the express purpose of adding a new specimen to their skull collection. Represented in the latter class, according to Romilly, are the tribes on Orangery Bay and Cloudy Bay who, however, are not anthropophages. A third class might consist of those headhunters who go hunting on some religious motivation. For example the Wabuda people on the northern side of the Fly estuary in 1891, on the happy conclusion of various canoe- and house-building projects, had to sacrifice fifteen heads of natives of various neighbouring tribes, and fulfilled this vow without delay (Annual Report 1892/1893:24). [326]

In earlier years the Maipua and Walili natives occasionally conceded to the missionary MacFarlane that formerly they had enjoyed eating human flesh, and the natives of Rossel Island must have become totally unfaithful to their customs if they now despise human flesh. At the very least they were the worst anthropophages, as we have already seen. Finally, MacGregor himself records that in 1897 in the northeast of the British Protectorate, on the Musa River, he encountered natives who were returning from a war expedition. They came downstream in several canoes, with the corpses of several dead enemies aboard; some of them were already cut into pieces and partially cooked. Out of all this comes the fact that while cannibalism may be dying out in British New Guinea, it is not yet extinct. In any case the efforts of the Administration and the good influence of the missionaries will soon be able to overcome this native vice as well.

The land that a tribe possesses is distributed among the individual families, and in turn each family member receives his share for use, from the head of the family. Some tribes, like the Aroma and Kemaria people, have been in possession of their land for more than four generations; the Kamales for ten generations; and others again for eleven to sixteen generations. The Motu people, who according to legend emigrated from the west, have been occupying the same soil since time immemorial, likewise the Saribi and Panietti peoples. In such tribes then, the tribal land is, for the most part, assigned, i.e. already in the possession of individual families, and since the tribal boundaries abut directly onto the territory of other tribes, it is not easily possible to expand the gardens further.

Inheritance of land is structured differently in individual tribes. In Port Moresby the ownership of the land cultivated by the parents always goes to the oldest child, whether male or female; in the Rigo district, girls are excluded from the succession, but it is the father's duty to make distribution in other ways in the event of death. The Kabadi people assign succession to the estate to the nephews of the deceased, who [327] for their part provide for the other survivors. In the Nada district it is customary that the father's share of the land falls to his siblings, while the children inherit the mother's share; in Sariba, Wedau and Banarua the father's brothers are the inheritors of the land. In Dobu, after the father's death, the land ownership falls to the children of his sister, while on the death of the mother, her share is transferred to her maternal uncle. Finally, among the Quaipo, Ureni, and Saboia people, the inheritor of the paternal land is the eldest son. Nowhere can a woman, by marriage, transfer land into the ownership of a foreign tribe, but probably, a husband who takes a wife from an outside tribe can, by shifting to his wife's village, become a co-owner of her share of the land.

A natural consequence of the lack of vacant land in a tribe is that in the east and southeast of British New Guinea the family, with the consent of the tribe, can both sell and lease land to members of a foreign tribe; also, renting is not unknown. A share of the harvest is demanded as the cost of the lease. Among the Tupuselei tribe in the southeast, women can never be land owners. The Wagawaga people on Milne Bay sell and lease not only their land to natives of foreign tribes, but are also encouraged to give it away as war reparation or penalties for additional tribulations. In the west, on the other hand, land is never surrendered to strangers at all. Among the Masingara

people a woman may well have ownership of land, but only up until her marriage, because then her share goes to the male members of her family. Similarly, in the northwest, tribal land is owned by individual families. Should someone die, his share of the land is divided equally between his son and the children of his sister. There too, land sales and leases are common. In the south, the Taupota people have owned their land through three generations, previously they lived in the mountains, in Hidana. On the death of the parents the land passes in equal shares to the children (Annual Report 1892/1893:38; 1894/1895:40 *et seq.*)

The land on which the houses stand belongs as a rule to the owner of the house; in the west, on the other hand, where often several hundred people live in one house, the house belongs to them all, while the house site usually belongs to [328] someone else. In very rare cases the entire land on which a village is built, belongs to a single person; and this is only when the village has not been long established. By limitation of the right of the original owner of the land, the house sites gradually pass into possession of the house owners. In the Taupota tribe there is no special right of ownership of house sites.

Forest is common property; the land on which the trees are growing, by cultivation, passes into the ownership of the cultivator. Fruit trees as a rule belong to the owner of the land on which they stand. If they were planted earlier, the landowner has no right to tree or fruit, these belong to the person who planted the tree. The landowner is entitled only to compensation, usually a portion of the fruit. Often the fruit trees bear the owner's mark on the trunk.

Rivers are never privately owned: anyone can travel on them and fish in them as much as they like; although the signs (mostly knotted grass) by which they tend to preserve a site are well respected. Hunting is free everywhere, and even on foreign ground the shooter's right to shot game is not impinged by the right of the landowner. On the other hand, ponds and lagoons are often in private ownership. Domestic animals usually belong to individual family members. Often father and son are co-owners of a pig, but usually, according to custom, the pigs are eaten by the villagers together on festive occasions.

Right of inheritance is treated differently, as we have already seen, depending on whether the father's or the mother's jurisdiction dominates. Final dispositions are strictly guarded and followed, on the grounds that otherwise they fear the adverse consequences that the departed spirit could visit upon them. The Motu people call the testament *omoi* (Chalmers, 1895:162 *et seq.*) In order to protect the heirs, an Ordinance recently issued stipulates that in the event of an absence of any testamentary disposition, the estate of a native shall be regulated according to the customs and procedures within the tribe to which the deceased belonged. Since these, like all the other ordinances [329] concerning natives, had been translated into the Motu dialect, they have become understandable to a very large proportion of the natives, and, without a doubt, generally obeyed, thereby bringing natives and administration ever closer together.

It has to be remembered that the Papuan is a child of Nature and, as such, has come into contact with civilization without having passed through any of the transitional stages. Whether or not he is able to withstand and survive this will depend, first and foremost, on how the bringers of civilization treat him. The prerequisites of his ability to be educated lie in his character. The Papuan of British New Guinea is not averse to order or cleanliness, he has a sense of family life, and respect for old age. He is capable of comprehending justice and authority and likes to follow the right leader. On the other hand, however, there are bad qualities: he is cruel and obtuse, envious and greedy, cowardly and unreliable, distrustful and superstitious in the highest degree, and, with a very distinct individualism, sadly without any ambition at all. His senses of vision and hearing are exceedingly acute; his memory, on the other hand, is only short-term. The very least among the Papuans can talk of their grandparents, but rarely can anyone speak of the ancestors beyond the grandparents. Thus you can hardly talk of a history among the Papuans. They have their legends about the origin of the world and the first people, about fire, fruits and so on, like

other peoples on the same and higher levels of culture; and stories and folktales: those in which the supernatural plays a part are very popular among them.

According to tradition among the Motu people, the spirit Kupa created the heavens and earth, and Ha created mankind. According to the beliefs of the natives west of Port Moresby the first people, Kerimaikuku und Kerimaikape, came out of the earth. However, both were men and they had only a female dog with them. They paired with it, and their offspring were a son and a daughter, who later married and had fourteen children: the founders of the tribes between Port Moresby and Taurama. The Orokolo legend of the origin of the first humans is far more attractive. According to this, the spirit Kanitu first created two men, Leleva and Vorode, and then two women. These two couples were the founders of the Orokolo [330] tribe. These natives also believe that they learned the essence and meaning of feasts from the spirits.

As the subjects of British New Guinea, like the Papuans, spend many hours of the day telling stories, they also spend a lot of time on dancing and feasting, and do not differ in this from their brothers in the north and northwest. Most of the time of a year by far is spent on preparing and holding feasts, and this must certainly be brought under control if one wants to train the natives to become usable workers. The more difficult question is how one can deal with this pleasure-seeking in the best way. Festivities are the same as in the rest of New Guinea. In the southeast war feasts are celebrated with particular pomp and ceremony, and others proceed among the already-mentioned Legoa people. Among these the Kepo-Kepo, those who have captured or killed an enemy, put on a feast for the nearest relatives of those for whose revenge the war expedition was undertaken. They themselves do not take part in the feast but watch on, in full war costume. Then, if the enemies pay compensation for the dead, the relatives of the latter in turn have to host all those who took part in the action of revenge. In this case they are expected to distribute the items received by way of atonement, freely among their guests (Loria, 1895:52).

Dances are rarely performed among the natives in the southeast, only for very important festivals. In the west, on the other hand, dances, and especially mask-dances, are very often the order of the day. They dress up as a fish, or as any kind of bird, and attempt to perform the flight and the movements of the animals they are imitating, be it the dolphin, the cassowary, or the wild duck. On such occasions the dancers wear artistically-designed masks on their heads, not infrequently the head of the animal that they are representing. Otherwise, there are line dances and individual dances, as in the rest of New Guinea. Here they are the same as there, sometimes faster, sometimes slower, sometimes moving forward, sometimes moving to the side.

To produce their cylindrical drums, the same shape as in Kaiser-Wilhelmsland, the natives prefer to take [331] already-hollowed-out branches or small trunks, which they then work on with flint and shell tools. Otherwise these drums are no different from those already encountered: open at one end and usually covered with lizard skin at the other. They beat these drums with their fingers; only odd tribes like the people on the Purari Rivers and on the British–Dutch border make use of larger, hollowed-out tree trunks as drums, like those we have already seen in Kaiser-Wilhelmsland. Like the little drums above, they are the constant accompaniment of dances of the natives. The latter usually raise a melancholy song, which has a different content depending on the festive occasion. At a harvest festival they praise the spirits, because they have allowed the fruits to thrive; at battle feasts they mock the enemy; and at funerals they highlight the virtues of the deceased. The melody is almost always the same: a short note is regularly followed by a long note, and so on.

They often play the flute as a pastime but never for dancing. Other musical instruments are the conch, which, as in the rest of New Guinea, serves more as a signaling instrument, whether it be for the approach of the enemy; a forthcoming pig market; or to announce a pig feast to neighbouring villages. The natives on Milne Bay like to use the conch for yet another purpose. They blow on it when they slaughter their pigs, to distract the listener’s ear from the squeals of the

pigs, or a Papuan father uses it to drown out the cries of his offspring whom he has given a beating for some misbehaviour. Also, a toy similar to our pasteboard rattle or ratchets, which previously filled the passing ears at Christmas markets with their noise and crackling, is particularly popular among Papuan youth. Hard beans, loosely joined together on a thread inside a shell, cause a noise by clashing with one another when the shell on a band is swung round in a circle. Jew's harps are also represented. Children amuse themselves in many ways: the little girls springing through hoops, and the boys with war and hunting games. Just like our little ones, the Papuan children build houses and play "mothers and fathers" (*dubudubu*), or they enjoy a pastime [332] of making small boats (*teretere*) or playing crossball or football. Also popular, especially among boys, is a game in which two of the stronger boys hold hands crosswise and a smaller boy takes this improvised seat and is hurled up in the air by the two stronger boys until finally he drops off his 'throne' amidst general laughter. Finally, we mention a very special pleasure of Papuan youth, which provides a lot of fun for the little natives. Five or six boys lie flat on their stomachs on the ground. The sixth rises and marches as fast as possible over the bodies of the players lying on the ground to then lie down beyond the first. The fifth follows him in the same manner, and so on, until they have all been through; then they all get up with great glee, to start the game over again (Chalmers, 1895:162 *et seq.*). — The initiators and leaders in the game are often the children who have travelled outside, or who have visited friendly tribes with their fathers on trading trips, and have spent some time there. As a result they are proficient in a foreign dialect and thereby gain prominence among the rest, and easily become leaders in the games.

The fact that there is no unified Papuan language has already been mentioned, as has the fact that the diverse hundreds of Papuan dialects are all related to one other. An English linguistic researcher studying the grammar of the Papuan dialects, found a striking resemblance to the Hebrew idiom, especially with regard to the verb tense, as we have also had occasion to remark in poetry, in the form of echoes of the Hebraic. Neither rhyme nor rhythm, but only the parallelism of the lines alone, characterizes the poetry of the Papuans, especially in the southeast. In any case, the Papuan dialects belong among the oldest idioms in the world, as the study of linguistics has shown. The fact that a written script does exist, has also been found in the southeast, from the inscriptions on weapons and knives. However, it is only a type of Rune writing, which happens in the first stages of development. The isolation of the tribes, the low-level of contact, but also suspicion, and the [333] superstitious fear ingrained in the Papuan character is more likely to have contributed to language fragmentation than to have eliminated it. Although individual words in the various Papuan dialects are almost all derived from the same root, here too in British New Guinea there can be found natives living only seven or eight kilometres apart who cannot communicate.

Linguistic research is made more difficult by the fact that the speaker's mood often gives this or that word a different pronunciation from the usual. The letters D, P, or V are often used without any differentiation, and equally often L, R, and N are interchanged. Furthermore, perforation of the nasal septum weakens the nasal sounds not inconsiderably, and, finally, betel chewing damages the teeth and shifts the corners of the mouth in such a way that this also hinders clear pronunciation. One more thing is added, which contributes to language confusion. Among Papuans the desire to imitate is very well developed, as it is among the apes. So if he hears the European pronounce an English word not quite correctly or totally incorrectly, and he likes that pronunciation, then he retains it. Another person gets it from him, then a third person copies it, and thus the correct pronunciation of the word soon becomes blurred.

Admixtures of Polynesian and Malay language elements are found everywhere; the purest dialect is spoken by the natives on the Fly. As MacGregor reports, in the southeast the most highly regarded people tend to be addressed in more respectful language than the lower people. The most widely-known and widespread in the southeast is the Motu dialect, which covers the area from Port Moresby to Kapa-Kapa. In the west the Kiwai dialect is almost as common as the Motu dialect is

in the east: it is understood along a 250-kilometre stretch of coast. Another widespread dialect in the west is that of the Boigu islanders. Totally unknown to the administration are the dialects spoken by the natives near the Dutch border. The missionaries, especially those of the London Missionary Society, have performed a great service by collecting these dialects. However, the efforts of the current Governor are aimed mainly at introducing English as a linguistic means of communication among the natives. Through the support of the last-mentioned mission, he has already partially succeeded in this. In the mission [334] schools in Port Moresby and Kwato the children in the upper classes are taught only in English. The fruits of this facility will be of incalculable value for future generations.

An excellent means of impressing the natives with the language and with the law of the administration both at the same time, was found by the missionary C.W. Abel stationed in Kwato. In the form of a catechism in English for the children, he put together the twenty-two natives' commandments or prohibitions which are incorporated in the ordinances regarding native affairs, and has achieved excellent results. For example, it states briefly and concisely: "You should plant and nurture coconut trees"; "you should build and maintain pathways"; "you should not bury anyone either within the house or in the village"; "you should despise sorcerers and point them out to the administration"; "you should protect your neighbour's goods and deliver up evil doers", and so on. Also, the Catholic Mission of the Sacred Heart on Yule Island and St Joseph River have been making an effort to teach their boys and girls English; in the same way as the Germans in the German Protectorate, in their sister mission in Kiningunan on the Gazelle Peninsula in the Bismarck Archipelago have been successfully doing for years, under the guidance of their Bishop Coupé.

Regarding counting and calculating, the natives of British New Guinea are at the same low level as the rest of Papua. For example, the Orokolo people begin to count with the little finger of the left hand, then when they want to indicate further objects they go through all the fingers of the left hand, then follows the arm, up to the ears, the nose, and the eyes, then down the right side as far as the toes of the right foot and then the left foot. On the other hand the Motu people have the most complete numerical system: they can count up to a hundred thousand.

1	is Tamona	10	is Quanta
2	" Rua	11	" Quanta Tamona, and so on
3	" Toi	20	" Rua hui
4	" Hani	30	" Toi hui, and so on
5	" Ima	100	" Sinaluo
6	" Taura Taura toi	1,000	" Daha
7	" Hetu	10,000	" Domaja
8	" Taura Taura hani	100,000	" Kerebu
9	" Ta		

[335] The Malay *lima* for 'five', as has been ascertained so far, occurs in sixteen Papuan dialects. For the rest, they do their reckoning in their own way. When counting tobacco, for example, they stick small wooden needles into a sago leaf and thereby note the number of plugs or leaves (Australian plug tobacco is extraordinarily popular among the natives as a trading item). A man going on a journey marks his reckoning or features on his bow; and the warrior cuts as many notches in his club as he has killed enemies.

Time is determined precisely, by the position of the sun, and on trading voyages across the sea they use the stars as signposts, although their astronomical knowledge is not as far advanced as that of the Fijians and Solomon Islanders. There are tribes in the west, like the Kerepara, who calculate the week as three days and then celebrate a day of rest. However, most Papuans are

unaware of such a division nor of the concept of a special day of rest; they rest and celebrate when they feel like it.

4. Land productivity

The Papuan in British New Guinea has it in common with his brethren in the German and Dutch protectorates that he does not work much. The less he needs to work, the better it is for him, and the requirements which Mother Nature generally places upon him are not onerous. She provides him with the necessities of life and limb without demanding the appropriate tribute of work and effort. He enjoys the fruits of the coconut palm and breadfruit tree, and bananas without exhausting himself; and also the taro, yams and sweet-potato gardens, as well as sago-processing requires only a small amount of effort and little expenditure of energy. Establishing gardens here is also the responsibility of the women; in individual areas they always cultivate what seems to fit the soil.

Yams and sweet potatoes, for example, grow better in dry soil, and are the principal food of tribes who have this soil type: thus yams are grown a lot by the Motu people [336] and is the staple foodstuff there. Sago can be found in almost every region, in over-abundance in some, such as Elema, and on the other side on the German border in the Mambare district. Sago is, so to speak, the 'daily bread' of the Papuans in British New Guinea. They enjoy it in both the baked and boiled form. It is often shaped into small balls and then baked over glowing coals; the beautiful brown crust that forms on the outside increases the appetite. Sago is boiled with greenery in a coconut sauce with banana leaves or with breadfruit seeds. As in Dutch New Guinea, here too they know how to preserve sago. It is stored either securely wrapped in leaves or in big clay pots. The tribes on the upper Fly live mainly on bananas and sugar cane; the natives have more than fifty species of the former. In times of famine they boil banana leaves as a kind of spinach. Taro thrives better in limestone soil than in damp soil; there are different varieties on Taurawa Bay and in the Trobriand Islands.

Generally the gardens are carefully laid out and fenced with rammed piles and stakes. If the area intended for planting is covered in trees or low scrub, it is first cleared. Then they line up in a row; each man has a long, pointed stick in his hand. Simultaneously, as though on command, the pointed sticks are sunk into the ground and the soil is thrown up. If one comes across such a row of industrious Papuans all working in unison, one is involuntarily reminded of the regular stroke of a well-trained rowing crew. When this initial, rough work is completed by the men, the women come into line. They cleanse and prepare the soil for sowing; and the sowing itself is the task of the women alone. The seedlings are carefully planted in rows; they even use a twine to keep a straight line. When they begin to ripen, bananas are carefully wrapped in dry leaves to protect them from the birds. The land is not infrequently drained by deep trenches, which are dug and maintained according to all the rules of Papuan art, and are bridged wherever paths intersect them. The drainage systems are usually a matter for the tribe. Since they require a lot of [337] time and effort, the entire tribe is summoned as a rule; the garden layout is the responsibility of the male members of a village community or family in common, as in Kaiser-Wilhelmsland.

Like their brothers there, the Papuans in British New Guinea are, in the main, vegetarians. Here too the coconut is the main food source; it serves as food in many ways. Often it, i.e. the inside, is made into a kind of sauce; but it is also grated, and sprinkled on various dishes as a topping. They prepare the fruit of the breadfruit tree as follows: it is first boiled, then peeled, and the inside is cut up. Then the pieces are placed on a banana leaf and left in the sun for several days. Finally, it is boiled again and then prepared as a pudding, and eaten with coconut sauce. The natives prepare a similar dish from the fruits of the mangrove tree, but enjoy it only during times of famine; then they also take refuge in wild figs, particularly two varieties of them, which the natives call *sabo* and *igulara*. Pandanus leaves are also an aid in times of need, as are the seeds of the fern

palm (*hatoro*). At such times, in the Rigo district they enjoy the fruit of the *hogawa* tree, which is poisonous. To detoxify them, they steep the fruit in water for a long time. In the southeast there are various nuts that taste good but are difficult to open. The natives on the slopes of Mount Knutsford in the Owen Stanley Range cultivate a type of beans and peas. Wild mango fruit is generally popular, as are a whole series of salads (lettuces), pumpkins, melons and tasty passionfruit. Tubers are eaten roasted or boiled; reptiles, fish, dogs and pigs only in a fried or roasted state, rarely raw. Lizard, turtle and crocodile meat is enjoyed, nor is snake rejected: its flesh is said to have a taste similar to pork. Little boys are encouraged to eat the heads of snakes, in order to become clever and brave. Crocodiles are frequently caught in the Fly area, and their meat often enjoyed there. Turtle eggs are a great treat for all Papuans. A taste for birds is rare, apart from the frequently-kept chickens and pigeons. [338] They pluck these only perfunctorily, then put them in the ashes for a short time, cut them into pieces, and eat them. The natives in the region of the Astrolabe Mountains do not shy from eating rats and frogs after they have roasted them over the coals (Chalmers and Gill, 1885:99 *et seq.*). Roast dog and roast pork are the greatest favourites of them all, but are unaffordable as a daily dish. An unlovely custom among some tribes is the giving of certain rights over the wives of his companions, to the lucky killer of the first pig on a hunt (MacGregor, 1897:70). In some villages pigs may be killed and eaten only at a certain place. As a rule, the pig is roasted with skin and bristles long enough for the bristles to be singed off. Then it is divided up, cut into small pieces, and eaten with great enjoyment. Wild pigs are much bigger then the tame Papuan pigs; they are long-legged, slender and deep black. The dogs belong to the same dingo-species that we have already met in the rest of New Guinea; shy, cowardly animals that howl rather than bark.

They cook more often in pots than on hot stones. Usually the fruit or the fish to be prepared is placed in a banana leaf, wrapped, and then roasted over the fire. For boiling food they use seawater and sometimes coconut milk, but only when fresh water is not available. Here and there they put the prepared food on wooden plates, although they usually use plaited coconut leaves or a banana leaf. They clean the pots in containers made from sago leaves. Bamboo canes or coconut shells are used for storing water; the former are sometimes prettily decorated, for instance on the Bennett group.

When the women prepare the meals they carry them usually in wooden bowls or on banana leaves and hand them to the men, who receive them sitting in groups; if the men are dining in the meeting house, where access is denied to women, the men serve themselves. Women and children eat separately from the men, often without sitting down. Only in a few areas does the family [339] eat together, in Maupa for example. There wallaby meat is very popular, and a type of dumpling made from arrowroot (*Maranta arundinacea*) cooked in fat. A well-known dish in British New Guinea is yam porridge sprinkled with grated coconut. They eat with spoons made from coconut shell or pearl shell. Here and there six-pronged forks made from cassowary bone are used when eating. For peeling bananas and yams, and for cutting meat they use knives or scrapers made from bamboo or shell. As a rule, they eat with their hands, which they also use to hold the bowl, without one task disturbing the other. The bowls are made of wood, clay, or coconut shell.

Not uncommonly in British New Guinea, small gardens are laid out around the natives' houses in which they grow pretty ornamental plants such as hibiscus and croton; they also cultivate the betel palm, tobacco, and kava (*Piper methysticum*), the popular pleasures of the Papuans. The mountain dwellers love drinking kava just as much as the coastal inhabitants. Kava is expressly forbidden to boys and youths. Ginger, as already mentioned, is often enjoyed by the men before they go into battle, to steel their resolve; it is also administered to dogs before they go hunting, for the same reason. They chew the ginger and spit streams of saliva on the dogs. As far as we know, tobacco is raised almost everywhere, apart from the short stretch between Ipote and Mitrafels in the northeast corner of British New Guinea. Even on the slopes of the highest mountains deep in

the interior, thriving tobacco plantations have been encountered among the natives, for instance on the slopes of Mount Scratchley and Mount Knutsford. The tobacco is smoked in pipes or, as in Kaiser-Wilhelmsland, in tree leaves or banana leaves. The pipes are very simple; they consist of a bamboo cylinder about 65 cm long and about 6–9 cm in diameter. The tobacco is wrapped in a leaf and fitted into a hole near the end of the bamboo tube; then the smoke is sucked through the tube. The pipes are perfected on the Fly; there, a cigarette holder is attached to the bamboo cylinder.

Here too, domestic pigs, together with dogs and chickens, are the only domestic animals. The pigs are bought and sold in the markets, which the natives hold fairly regularly, usually on the border between two tribes. But other food, especially fish, fruit, vegetables and other commercial articles [340] of various kinds are dealt with at these get-togethers. Such market places are found, for example, in the Aroma and Mekeo districts, in the St Joseph River area, and the surrounds of Port Moresby, Samarai, Rigo, Boigu and other administrative stations. The natives of the Aroma district dominate trade over the entire coastal stretch between Cloudy Bay and Keakaro Bay. They belong among the few who, on free plots, have already made a start on copra production. Included in this small number are the Kerepunu people, who have already planted out two thousand coconut palms on land given to them by the administration; also the Maiwa and Yokea people, who trade in copra and sandalwood under the influence of the London Missionary Society. The mountain tribes too, on the slopes of the Kobio Range are helpful in copra production for several traders settled there. Since the administration, through its Coconut Plantation Ordinance, Regulation II, 1894, (Annual Report 1893/94:59) decreed the planting of coconuts an obligation for the natives, the setting-up of native coconut plantations has progressed slowly but steadily. The ordinance then leaves it up to the local Magistrates for Native Matters to arrange what minimum number of coconut palms must be planted each year by the inhabitants of each village. The law is strictly enforced, and nowadays everywhere in the coastal villages and in the settlements in the interior you see nuts laid out in rows for germination or planting out; nuts which, of course, will become viable trees only after six years.

In addition to coconuts as food, sago is one of the most popular and most widely-traded foods. There are very many tribes that live almost exclusively on sago: a great number in the Fly region and in the water-logged surroundings to the east on the Avid, Gama, Gawai and Bevea. A rich sago-area is the Motu-Motu district at the mouth of the William River, and the territories of the Orabu, Lese, Mowiawe, Karama, Umai, Silo, Pisi, and Kerema people. Despite the fact that the natives, especially those near the stations, are ready and willing to work for their protectors, we have totally missed the beginnings of European planting [341] and establishing of plantations, which are already flourishing in our protectorate. When we ask ourselves why, we find the answer mainly in the administrative policy of the former, highly-respected governor, Sir William MacGregor. When he was appointed Administrator of British New Guinea about ten years before, he made it his main task, besides the scientific exploration of the country, to take care, as far as possible, for these culturally-important, interesting inhabitants, and the care for them was initially more dear to his heart than promotion and support of the white settlers. Only in recent times has the question of settlement and cultivation of the area by the whites been discussed in greater detail. In 1897 the sum of one thousand pounds was put into the budget by the Administration for the purpose of purchasing land and handing it over, at a cheap price to white settlers, (Ordinance N° 6, 1896; Annual Report 1896/97:7).

In almost every district the Administration already owns land, either acquired from the natives or taken possession of, which for the most part has already been used through administrative channels for the planting-out of coconut palms. Where this is not possible — and, unfortunately it is the major part, for virtually all of the land near the coast suitable for arable farming is already cultivated by the natives — it can possibly still be used for wood production and

mining. The latter, especially gold production, and mother-of-pearl and trepang harvesting, are so far the main sources of production in British New Guinea.

In addition, precious woods such as sandalwood, cedar, rubber and cypress trees, and *massoi* bark are harvested. There is a coal deposit in the Purari district on Abukiru Island, and in the same district a large sandstone deposit has recently been discovered.

Trade and industry are unquestionably blossoming more in the southeast and on the islands than in the northeast and northwest. There especially pearl-fishing, trepang harvesting and gold-mining are carried out. The former is less popular than the latter two types of labour, particularly because of the difficulty and hard work that it engenders, although it is more rewarding. On the coast, on Joannet, Southeast, St Aignan, and Rossel islands and also in the Trobriand group, pearl [342] shells are particularly common on the seabed, but they often lie twenty-four fathoms down, and in these circumstances diving is as difficult as it is dangerous. The natives of the Trobriand Islands operate the pearl fishery on their own, and then sell their product to the traders. In 1893 alone, pearl production amounted to ten thousand pounds sterling; trepang export on the other hand only £1,714. Trepang belong to the order of echinoderm marine animals with an elongated, cylindrical body a half to one metre long. They tend to lie on the soft ground of coral reefs and show little animation. When touched, they drain their viscera and release water. They are boiled in seawater, in big, flat, iron pans. The following day they are slit open lengthwise and dried in the sun. They are worth forty to one hundred and ten pounds per ton. Of course, trepang fishing in the Protectorate is permitted only after payment of a five-pound fee. Ships engaged in trepang or pearl fishing are also required to obtain a licence: one pound for vessels under ten tons, two pounds for over ten tons, renewable annually. Each trepang fisherman and diver on board must also pay an annual licence fee of one pound (Ordinance III for 1891, Annual Report 1890/1891:11).

Traders are involved in copra both in the southeast and in the northwest. The Mekeo district is a good copra region, where twelve traders alone are supported by the natives in acquiring copra. The first coconuts planted out under the Coconut Plantation Ordinance have been producing for two years already.

Gold production has boomed enormously over recent years. On Misima in the Louisiade Archipelago in 1895, eighteen gold prospectors were active; on Murua (Woodlark Islands) 500; on St Aignan 400; and roughly just as many on Southeast Island. Of the rivers in the British Protectorate, the St Joseph's River, the Angabunga, Vanapa, and Mambare are gold-bearing. In 1897, at the instigation of the Administration, about four hundred gold miners arrived in Port Moresby, drawn to the rivers in several divisions. However, so far their yield has hardly come up to expectations. Of the throng of gold miners who had gone to Marua, by the end of 1897 only half were still there, [343] but these, however, had had very good results. The upper Mambare has, for several years, been a popular prospecting site for gold-miners, where sites prospected earlier have been reworked over the last few years by a unit under Mr Schmitt. These people have not had much success; on the other hand a group led by a certain M.W. Simpson have. Yet by and large the efforts made by gold-miners in British New Guinea have not met with the greatest success in recent years. From the 389 royalties paid out between the years 1894 and 1897, the 262 pounds sterling that flowed into the Administration's coffers has probably been the least amount paid (Annual Report 1896/97:32 — Ordinance No. VII for 1888 in Annual Report for 1888/89. p.15 and Regulation in Annual Report 1894/95:8. — Cf. p.348 on the export of gold).

5. Trade and transport

In certain British New Guinea tribes trade and transport is limited to the import and export of foodstuffs, especially smoked fish and the like. The Papuans in the Astrolabe Mountains produce a kind of headdress of bird feathers, which they sell to the coastal tribes. Further northwest, the native populations around Port Moresby stand in very close trading relationships with the Motu-Motu people and the population of the rich sago districts to the west.

In great flotillas of canoes, four or five vessels (*lakatois*) linked together, they set off from Port Moresby in September or October for the Gulf of Papua, to trade pottery, axes, armbands, items of battle jewellery, pearls, knives, tobacco, *lava-lavas* (red cotton skirts) mainly for sago but also other foodstuffs and canoes, which they then on-sell further south towards Hood Bay, to the Kerepunu, Hula and Keile people. Often they have so little left over for themselves, that before long they come to the end of their supplies and then have to suffer. Several [344] months before the start of the trading trip to the west, the Motu people begin to accumulate trade goods that they want to exchange for foodstuffs on the Gulf of Papua. The women are busy making pots, to make the men's journey very worthwhile. A cargo of 20,000 pots is nothing unusual; in exchange they bring home about 150 tons of sago.

Every year at the beginning of the southeast tradewind, the sago voyage is undertaken to the northwest. Certain ceremonies are regularly associated with the embarcation. The leader or guide of the trading flotilla is *tabu* for a period before the departure, that is, he has to avoid his wife and certains foods; he may not associate with the others; and has to lead a quiet, withdrawn life. Before going on the journey, they have to make sacrifices to the spirits of the deceased, i.e. dishes are placed before the centre posts of the house, asking the spirits to let the expedition succeed and to guide them, and also to ensure that the hosts receive them well. While the women pack the pottery the men make the canoes ready for the voyage. The trading vessels usually consist of a big, hollowed-out tree trunk and are provided with outriggers and a platform; a small shelter hut is erected on them for storing the cargo. Mangrove stems serve as masts, secured into the middle of the canoe just as they are taken out of the ground, including their roots. Wide sails, sewn together from plaited mats, are fastened to them with ropes. The latter are usually made out of hibiscus bark; a big, stone block attached by ropes to a long stick, represents the anchor. Finally, usually on the *lakatois*, the first and the last of the assembled canoes, small huts are erected as sleeping chambers for the leader and his people, made of sufficiently solid material to withstand the heaviest seas. The previously-mentioned huts into which the trade goods have been loaded are placed on the platform of each canoe. The pottery is packed so well in dried banana leaves that breakages are rare.

A couple of days before departure a big farewell party is held, with dances and beating drums; all the participants are beautifully adorned. When the cargo is loaded and all is ready, they paddle a few miles [345] out before setting the sails. The people take turns at steering. This is managed by long poles at the end of the *lakatoi*, and is not easy work. The other voyagers enjoy themselves, smoke, sing, and beat the drum, and for a long time their friends ashore hear the sound of the drums from the departing canoes. The duration of the voyage depends on wind and weather. It rarely happens that a canoe suffers a mishap, since the sailors almost never lose sight of land. When they have reached their destination, the reception of the long-awaited guests is very friendly and well-prepared; pigs and dogs have been slaughtered, sago cakes baked, and the betel containers filled. Since the number of new arrivals is generally too great to be accommodated in the village, they sleep and eat on board their canoes. The hosts bring them cooked food on their canoes. The initial period is devoted less to business than to the pleasure and joy of reunion; then, gradually, the newcomers bring their pottery before the people, and finally they prepare for the journey home. After all the goods have been traded, they travel up the rivers to fell trees, for the

few canoes in which their arrived are usually insufficient to take home the heavy cargo of sago that they have traded. Almost always they return with as many vessels as they started out, and the return journey is usually more difficult than the outward voyage, since they again link all the canoes into a big *lakatoi*. If they are surprised by a storm that becomes so threatening that their lives are in danger, they abandon the endangered canoes and make it to shore on the less-laden canoes (Annual Report, 1888:20; 1889/1890). Whether the natives use the stars on such extensive trading voyages is not quite certain; there is much greater certainty with the natives of the larger islands and certain coastal tribes, such as the Elema, Motu and Motu-Motu people. Likewise the Woodlark Islanders, who trade with the Teste Islands because of their famed pottery and always have to undertake an ocean voyage of more than 130 nautical miles to get there, [346] would hardly be able to dispense with the stars as guides during this long voyage. No more so would the Louisiade islanders and the natives of the d'Entrecasteaux Islands be able to navigate without their aid on their annual voyages to Teste.

Teste Island, due to its pottery industry, is a central meeting point for all islanders near and far; yet the pottery of the Teste islanders is traded also to mainland New Guinea, Chads Bay, Suau, Orangery Bay, and even further. Here and there among neighbouring islands the Teste islanders also distribute well-finished canoes, in whose manufacture they are masters. The pottery produced at Redscar Bay comes through the trade route as far as the Aird River. The Motu tribe provides mainly Kerepunu and Hood Bay with clay goods; the Roro natives too are not inexperienced in the pottery craft and trade their finished goods with the tribes to the west for sago. In the Aroma district the village of Maupa is known for its pottery, and pots from here are sent as far as Mailukolu and Kerepunu.

In addition to pottery products, widespread trade articles in British New Guinea are armbands and shell neckbands and foodstuffs like coconuts and sago, the latter, as we know, is produced mainly in the west. The Hula natives bring coconuts to Port Moresby, Bura, Pari, and Porebada and trade them for pottery. The Motu people provide the area of Redscar Bay and Motu-Motu with them; the Louisiade islanders supply fish, and distribute them as far as the Trobriand Islands for yams and sago. Again, the natives of Hood Bay bring their fish to the markets in Port Moresby and Kalo. The best shell armbands come from the d'Entrecasteaux Islands, for which the Dahuni people in the extreme south of New Guinea trade pottery. The Dahuni then distribute these armbands to Mailukolu, exchanging them for sago and dogs. The Mailukolu then give them to the natives of the Aroma district in exchange for pigs and canoes. Hula and Kerepunu have a lively trading arrangement with Aroma, and a favourite item of exchange are again those armbands, for which the Aroma people receive mainly birdskins and feather ornaments. Finally, the [347] armbands go from here along the trade route via Motu-Motu to the Naara and Elema people, and from there even to the Fly region. Yet the natives of the main island too are familiar with the manufacture of shell armbands, as we have already briefly touched on in the description of the natives' clothing. The armbands, known locally as *toia*, are also regarded as a major trading item in the southeast; a good *toia* armband is worth as much as a big pot of sago and, in addition, the *toia* is an indispensable, essential portion of the purchase price for a wife. These armbands are worn mainly in the Aroma district; they consist of 45–48 cm wide rings from the base of *Conus millepunctatus*, and provide an important trade article eastward to Kerepunu and westward to Freshwater Bay. Again, the Kerepunu people are skilled manufacturers of a nose ornament of polished *Tridacna gigas*, called *mokoro*, which they trade westward with the natives as far as Redscar Bay. Another item of jewellery which should not be overlooked as an important trade commodity is the *tauta*, a headpiece made of small mussels whose shell is broken at the hinge by a rock, and then threaded through the opening made. These are also made by the natives on Hood Bay. The Elema people are skilled at making delicate, braided headbands painted red. They call them *waake* and trade them as far as Keppel Point. A headdress made of parrot feathers is also

traded there. Finally, there comes into consideration as a trading item the so-called *mairi*, a small breastplate made of mother-of-pearl shell by the Hula people and brought to market, and cords strung with wallaby teeth (*dodoma*), which are likewise at home in Hood Bay (Finsch, 1885, p.21).

European exports in the year 1888–1889 were valued at £5,943, but last year they have risen to £44,345, a nine-fold increase! In 1888–1889 imports amounted to £11,408; in 1896–1897 they were £51,392.

Imports are, in the main, foodstuffs (colonial goods, etc.), clothes and linen, tobacco and cigars, iron and steel products, building materials and the like. The principal exports are as follows: [348] minerals and products obtained in the years 1888–1889 and 1896–1897, in the following quantities:

	1888-1889	1896–1897
Gold	3,850 oz.	7,184 oz.
Pearl shell	15¾ tons	147½ tons
Copra	76 ”	440 ”
Rubber 1895–1896	3 ”	16 ”
Sandlewood	42 ”	300 ”
Trepang	38½ ”	13 ”
Pearls		value 980 pounds sterling
Turtle shell		” 519 ” ”

Shipping traffic in 1897 (apart from the Administration’s ships) amounted to 150 ships with a total tonnage of 28,794 tons; 85 of them entering the three harbours of Port Moresby, Samarai and Daru, and 65 departing (Annual Report 1896/1897:39). The mail steamer, subsidized at eighty pounds sterling per voyage by the Administration, (up until then by the firm Burns, Philp & Co.) provides the connection between Cooktown and Port Moresby via Samarai. The mail service, including parcels and newspapers in British New Guinea, which, as in Kaiser-Wilhelmsland, has been connected with the World Postal Union since 1892 (Order in Council of 2 July, 1892; Annual Report 1892/1893:10), has increased since the establishment of the Protectorate as follows (Annual Report 1888/1889:92; Annual Report 1896/1897:40):

	1888–1889			1896–1897	
	incoming	outgoing		incoming	outgoing
Letters	2,366	2,587	Letters	11,148	11,550
Newspapers	4,071	574	Newspapers	7,441	1,635
Parcels	93	95	Parcels	181	475

6. Colonization of the Land

In conclusion, when in view of the above description we cast a glance over the land and people of the British Protectorate, we have to admit that the country, in particular the southeast and the central region apart from the mountains, is, for the most part, capable of cultivation. We must, however, exclude [349] the swampy river regions in the west, especially the Fly, the Mai- and the Wasi Kussa, as well as the land to the west of them, as far as the Dutch border. The population, in contrast to that of Kaiser-Wilhelmsland, is very much inclined to attack; yet their character also harbours such qualities that the people seem very capable of being educated.

Plate 27

Original in the possession of His Majesty the Kaiser

Chiefs from Koiari

(Lindt)

In view of this, it should not be without interest to examine the progress the Administration of the British Protectorate in the first ten years of its colonial activity in the country.

As we saw in the Introduction, New Guinea had already been annexed to England by Captain Bligh in 1792. A year later, the English ships *Kormuzen* and *Chesterfield* of the East India Company raised the English flag in the west, in Geelvink Bay, and from there the surrounding area was held in possession for a time by English officers. However, these as well as various later possessions were not confirmed by the Crown. Only after the conclusion on 6 April 1884 of the Anglo-German Agreement, regulating the claims of the two governments with regard to their spheres of influence in the South Seas, did Commander Erskine, on 6 November 1884 at Port Moresby, on the orders of the British Government, declare with all solemnity the assumption of British Protectorate over New Guinea within the boundaries laid down in the Agreement. Five English warships sailed to Port Moresby to provide due solemnity to the ceremony, and fifty native chiefs of the area were billeted on the flagship *Nelson* during the ceremony. Chief Bovaji of Port Moresby was presented with an ivory stick in recognition of his rank.

When Major-General Sir Peter Scratchley set foot on British New Guinea soil about a year later, on 28 July 1885, as the first Governor, with the title 'High Commissioner' he already found civilization, in a certain sense. According to their tried-and-tested method, England had given precedence to the merchants and missionaries in the uncultivated country. The London Missionary Society, which had been in the country since the beginning of the seventies, already owned beutifully laid-out stations in Port Moresby and Kerepunu, and had explored the country to a certain extent. [350]

Traders and larger companies had also established themselves here and there on the coast, the latter for example in Port Moresby and Motu-Motu. Mr Goldie already had his warehouse in Port Moresby; and in Motu-Motu the large trading firm of Burns, Philp & Co., operated the sago and copra trade through their agent, Edelfeld; Mr Page worked in Manumanu, exporting cedarwood. Even before the declaration of the English protectorate over New Guinea, pearls, trepang and turtle shells had been exported to an approximate value of 920,000 pounds sterling, and in the years between 1875 and 1888, 373 merchant ships participated in the trade between Australia and New Guinea (Annual Report, 1888:53). Various gold diggers had begun to recover gold in the southeast, and in all parts of the country traders in trepang, copra, pearl, and precious wood were doing more or less good business.

Sir Peter Scratchley used the initial period of his administration to establish his main station in Port Moresby; then he went on expeditions to get to know the land; firstly he visited the area southeast of Port Moresby, as far as South Cape, then he went to the southenmost part of the island, and finally to the northeast of the Protectorate. His next task was to call to account all those natives who had taken part in the plunder and murder of white people in recent years. He found out, unfortunately, that the whites, either by their brutality towards the natives, or by their throwing caution to the winds, or by their ignoring the religious views of the natives, had, regularly, virtually brought their fate upon themselves. Most cases were based on an indirect or a direct challenge on the part of the Europeans. In any case, the Administration very soon came to the realization that the Government could not possibly be held responsible for the behaviour of people who, by challenging the emotions of the natives or by ignoring their customs, had inflicted their murder upon themselves. Furthermore, it was clear that in cases where the punishment of the natives was necessary, warships could not do anything; but a strong, highly-mobile, dedicated police troop, well-trained in both shooting and paddling, should be on the ground. Such troops were initially composed of South-Sea [351] islanders with the assistance of some Papuans who, in cases of necessity would ultimately take the place of the former. Among the expeditions made into the interior during Scratchley's administration are that of Captain Everill up the Fly River already

mentioned in Chapter II, and that of Mr Forbes into the foothills of the Owen Stanley Range. Sadly, all too soon, in December 1885, Sir Peter Scratchley fell victim to the climate.

His successor was John Douglas who held office until the declaration of English sovereignty over British New Guinea in 1888. John Douglas and Sir William MacGregor, who led the country's government by strength for about ten years, are similarly of the opinion that a police troop, formed as much as possible by natives, would support the government better than warships. The other principles of Sir Peter Scratchley's regime were also adopted by his successors. This includes, above all, the emplacement of competent, respectable men (chiefs) of a village or tribe for strength and support.

MacGregor, a highly-capable, colonizing man, a true friend of the natives, and their protector, was born in Scotland in 1846. He initially devoted himself to the medical profession, and studied in the universities of Berlin and Paris. He was a physician for several years in the Seychelles and Fiji. There he distinguished himself in the suppression of native uprisings, and in the eighties the administration appointed him Deputy-Governor of Fiji. He remained in this position until he became Administrator of New Guinea in 1888.

The first measures taken by John Douglas and MacGregor in a legislative context were limited to the validation of laws applicable in Queensland, to New Guinea (Ordinances No. IV and VII, Annual Report 1888/89). Special regulations were initially issued solely for the protection of the natives. From Douglas came the ban on the handling of weapons, ammunition, explosives, and intoxicating beverages by natives; a check on their going out of their home territory without permission of the Government, and the purchase of land without mediation by the Administration (Ordinances No. I, II, and III, *ibid*.) A [352] criminal code that was comprehensible to the natives, and a very simple process of prosecution were provided; and courts were established for the sentencing of crimes by the natives, where the members of the court could be both Europeans and natives (Ordinance No. IX of 1889, Annual Report 1889/90:13). The term "natives" also included those representatives of other coloured tribes who lived according to native style. The process is so simple that no writing is required. In the rules of evidence, the proof provided by the eyes and ears is deemed stronger than any other evidence, especially that by hearing alone. The court language in these proceedings is English, or any dialect that is intelligible to the natives. Indigenous persons under fourteen years of age who have failed to comply with the law may not be sentenced to a longer term of imprisonment than seven days, and in the situation where an indigenous person is acting as a judge, the maximum penalty in such a case is a prison sentence of only three days. The limitation period is a very short one: no native can be condemned for a criminal offence lasting more than six months before his hearing, and may only be held liable in the district where he has committed the offence (*forum delicti commissi*). Only a few of the most important paragraphs have been taken from the Ordinance, to demonstrate its simplicity.

Serious crimes and offences by natives come before an actual criminal judge; gentleness in sentencing is the principle here too. In the most extreme cases, execution of the death penalty does occur, but only if no mitigating circumstance can be found at all. Usually this is provided according to the traditions and established codes of the natives. Actions considered as criminal include theft, slander, threat, bodily injury, burial of the dead within the house or village, adultery, sorcery, etc. Furthermore, in recent years regulations have been put in place concerning the protection and the accommodation of abandoned children (Ordinance V, 1892, Annual Report 1891/92:14), and for the raising of morality (Ordinance for 1891, Annual Report 1890/91; Ordinance VI for 1892. Annual Report 1891/92:14). Others regulate: school attendance; the establishment of [353] native village policemen (Native Regulation No. 1 for 1892, Annual Report 1892/93:9); installation of paths (Native Regulation No. 3 for 1895, Annual Report 1895/96:5); the care of coconut palms and destruction of the latter is punished by a term of imprisonment (Native Regulation II for 1894, Annual Report 1893/94:59). By yet others, the damming of rivers by tree

trunks being thrown into them (Native Regulation No. 2 for 1892, Annual Report 1895/96:5), and the cutting down of useful trees (Ordinance No. VIII for 1892, Annual Report 1892/93:8; and Regulation No. IV for 1895, Annual Report 1895/96:6) is prevented. Finally, as we have already seen, in the event that heritage is unknown, native inheritance law is regulated by a special provision, (Ordinance No. 1 for 1894, Annual Report 1893/94:57). Natives who work for Europeans, whether in the plantations, with traders, with gold-diggers, or as bearers for an expedition, are governed by the Native Labour Ordinance of 1892 and its Supplementary Order of 1897, (Ordinance II for 1892, Annual Report 1891/92:11; and Ordinance VI and V for 1897, Annual Report 1896/97:8). In any case, at all costs consideration is given both to the spiritual apprehensions and the custom and tradition of the natives.

Thus, protected against any prejudice and bad treatment on the part of their employers, the natives of British New Guinea work quite willingly for whites. Even with civil disputes among themselves, the natives often petition the Resident Magistrate for examination and decision, and willingly submit to his judgement. Such cases are not uncommon. A few years ago, when the Massingara and Mowatta people were unable to reach agreement over some coconut groves that were situated between their territories, they contested their dispute before the Resident Magistrate seated in the west; his decision ended the dispute. In 1894 a large piece of land in the Aroma district was the object of a dispute between several tribesmen; the judgement handed down by the judge was immediately accepted by the disputing parties without demur. Other disputes in the village- and family quarter are quite often resolved by astute and timely intervention by officials at government stations. Nowadays, these are the centre of the various districts, on which the natives of the surrounding regions converge to trade or [354] to seek work. For example in Samarai, the main station of the eastern district, only 120 natives from the surrounding area work for the administration; in the central eastern districts: the considerable number of 511; in 1865, in the western district 163 local natives were active on the stations.

Through the willingness of the natives to work for the administration and also the fact that prisoners are trained and educated to work for the administration, the annoying and costly recruitment of foreigners for the adminstration is taken care of. Last year all the work on the stations was carried out solely by prisoners and some indigenous labourers who were taken from the neighbourhood, and these tasks were not inconsiderable: in the central district the loading and unloading machinery was completed, and a lot of coconut palms were planted out; in the Rigo and Mekeo district bridges and a shipyard were laid out; in the western district houses and boats were built and fences erected; in Samarai large stretches of swamp were drained and a start was made on construction of a mole; in Tamat various vegetable gardens were laid out; in Novani large sections of land were cleared; and finally, in Port Moresby and Rigo, wooden and iron barracks were constructed for the police troop, and a powder magazine and boat harbour were brought to completion. If the eighty-strong police troop, composed entirely of natives, is not engaged in punitive expeditions or otherwise employed, it is used to assist in the station work, and, through their endurance and thorough training they set a good example to the station workers. Several Solomon and Fiji islanders, at the end of their contract with the police troop, have settled down in the Protectorate. As compensation for the repatriation journey money to which they were entitled, they were given a few acres of land and took Papuan wives. They have become peaceful settlers who, by their moral superiority, and knowledge of the Motu dialect have a formative and educational influence on the environment of their villages. For the natives, service in the police troop is the best education. In the first year they earn ten Schillings a month; in the second year that doubles. Yet only the barest minimum can be recruited for a second year, since Papuans, if they are far from their homeland, like our Swiss, have an irresistible urge to go home. [355]

To a certain extent the police troop is reinforced by the village police, who were established by the Native Regulation of 1892. This gives the Governor the power to appoint reliable people

from village districts as village policemen, to maintain order in the village, to bring every offence to his notice and, in the event of resistance, to have recourse to firearms. The village policemen receive two uniforms annually, each costing six Schillings. The policemen answer to the immediate station officer. They are, in part, often recruited from former prisoners, and in part from former police soldiers and, as MacGregor himself admits, the former are no less reliable than the latter (Report for 1893/94:95). In 1896 there were twenty village policemen in the Rigo district; sixteen in the Misima district; and over fifty in the central district. Through this establishment the administration acquires a power that cannot be underestimated, particularly during revolts and expeditions into the interior. In addition, with the recruiting of foreigners as police-soldiers having become unnecessary, the Government is spared quite a considerable sum annually.

The revenue of the Administration consists of the following:

	1888-1889		1896–1897	
Customs and tax	2,416	£ sterling	9,336	£ sterling
Mining rights	187	”	262	”
Fines	25	”	51	”
Licences	2	”	246	”
Other fees	2	”	448	”
Sundries (Postage etc.)	42	”	320	”

In 1896/97 this gives a total of 10,663.00 pounds sterling, an increase of 7,989 pounds sterling over 1888/89. Against this is the expenditure:

Wages	6,747	£ sterling
Ships and boats	1,258	”
Building and works	754	”
Gardens	94	”
Postal steamer	900	”
Sundries	6,475	”
Total	16,228	”

(Annual Report for 1896/97:40,41). This gives a deficit of 5,565 pounds sterling, which, in view of the considerable increase in revenue from year to year [356] is likely to be lost in the following year’s budget. The prophesy by the Queensland Premier, Mr S.W. Griffith, in 1888 that within ten years British New Guinea would no longer require a grant, has almost been fulfilled.

In the meantime, the administration’s costs are met with an annual 15,000 pounds sterling, and likewise the part- expenses of the 260-ton government steamer *Merrie England*, plus an annual sum of 509 pounds sterling for expeditions from the three Australian colonies of Queensland, New South Wales, and Victoria. For this, the revenue of the administration is remitted to the Queensland government for other initiatives. Each year by special law the budget is set in accordance with the British New Guinea (Queensland) Act of 1887. Others laws have been enacted, as MacGregor had promised during his time in office, only when urgent need required them. MacGregor says, quite rightly, that since settlement by Europeans progresses only slowly in the Protectorate, little new legislation is required for them, and therefore a multiplicity of regulations would tend to confuse the native population rather than leading to order.

We have already become familiar with the laws and ordinances regarding native matters. Apart from these, customs regulations exist (Ordinances VI and VIII of 1888; III of 1889 in Annual Report for 1888/89: 14,15; and Ordinance III of 1896 in Annual Report for 1895/96:6), which apply to all goods imported into the Protectorate with the tax customary in Queensland. The

activity of mining for precious metals is governed by the provisions of the Gold Mining Act of 1888, Ordinance IV of 1896, Ordinance V of 1897; Ordinance I and II of 1889 regulate legal proceedings; land acquisitions whether by the Crown or a third party (i.e. before 4 September 1888) are regulated by Ordinance X of 1889. Ordinance VIII of 1892 secures the Protectorate against the import of parasites and pet animals suffering from contagious diseases. Ordinance II of 1894 was enacted for the protection of birds; according to this the Administrator has the discretion to prohibit the shooting of rare birds, like the bird of paradise etc., at certain times and in certain districts; finally Ordinance IV of 1894 and IV of 1897 regulate the trepang and pearl fishery. [357]

At the head of the administration of the Protectorate stands the Administrator, supported by the two councils of state: the executive and the legislative councils, the chairman of the former is the administrator. Furthermore, the Executive Committee consists of the Chief Judicial Officer, the Secretary to the Government, and one of the senior station officials (Resident Magistrate). The Legislative Council consists of the same members plus such administrative officials as the Administrator appoints from time to time. Finally mention must be made of the Native Regulation Board, which the Administrator can convene in regard to legislation concerning the natives. As already mentioned, the laws of Queensland, with appropriate amendments, are also binding on British New Guinea.

Courts of First Instance (Court of Petty Sessions) exist at the seat of every Resident Magistrate, thus there are four courts. The Court of Second Instance is the Central Court, which, in criminal matters, is alone responsible at the same time for punishing the most serious crimes. If, in civil cases the value of the claim exceeds £100, there is a further appeal to the Supreme Court of Queensland, and likewise in criminal matters if the length of the sentence is longer than three months imprisonment. Finally, there is a Colonial Court of the Admiralty, which can also be appealed to the Supreme Court of Queensland in Brisbane. In the first year of operation of the courts in British New Guinea, the total number of cases brought before them was 71; in 1897 they had grown to 459, including only 39 civil matters (Annual Report for 1896/97:9). The huge increase is due mainly to the vast number of cases brought before the Native Magistrate Courts.

Officials, missionaries, traders, and gold diggers form the white population of British New Guinea. The main stations is Port Moresby, on the harbour of the same name. The land belonging to the main station comprises 1,281 acres; sadly, water is scarce and it is virtually only useful for grazing purposes. The seat of government is laid out as a town in several districts. The settlement of the Europeans extends from the eastern entrance to the harbour, largely northward from the coast; however it resembles more a village of villas than a town, since the houses and sheds lie scattered: some on the beach, some on the hillocks that [358] border the beach. The hills are quite steep, and give a barren, infertile impression. A mole constructed at the port makes loading and unloading easier. Near the landing place is a bureau building with one larger and four smaller rooms, which serve as central post office, warehouse and ships' offices. The larger room is furnished as a reading room, with all the major English and Australian newspapers. A large hotel, built of wood and iron and surrounded by verandahs, provides accommodation for foreigners; it has two reception rooms and eight bedrooms. Here too are the warehouses and sheds of Burns, Philp & Co., the big Queensland company which has the only store in Port Moresby. From the previously-mentioned hills drinking and washing water is brought through pipes to the town and the native village. The Governor's house is situated in a dominant position on a hill, about forty-five metres above sea level on the western side of the harbour, roughly 1½ km from the rest of the buildings, and is a single-storey building constructed in wood and iron. In addition, there are the houses of the Chief Justice and the other officials, all light and airy dwellings. The original prison, ten metres long and five metres wide, accommodating only three cells, may have been replaced by a more spacious one by now. Pretty gardens, with oranges, lemon, mango, guavas, bananas, and

coconut groves, and a large herd of horses and cows, which roam about in a single paddock, contribute greatly to the embellishment and revitalization of the station.

Near Port Moresby, the Fijian and Solomon islanders who had previously belonged to the police group settled in the village of Badili, in twelve huts that they built themselves; and at Laroki, on the slopes of the Astrolabe Range about fifteen kilometres from Port Moresby, a European settler has established a plantation. Even though he has not achieved much so far, he is extremely satisfied with the little that he has gained, especially with the soil and climatic conditions.

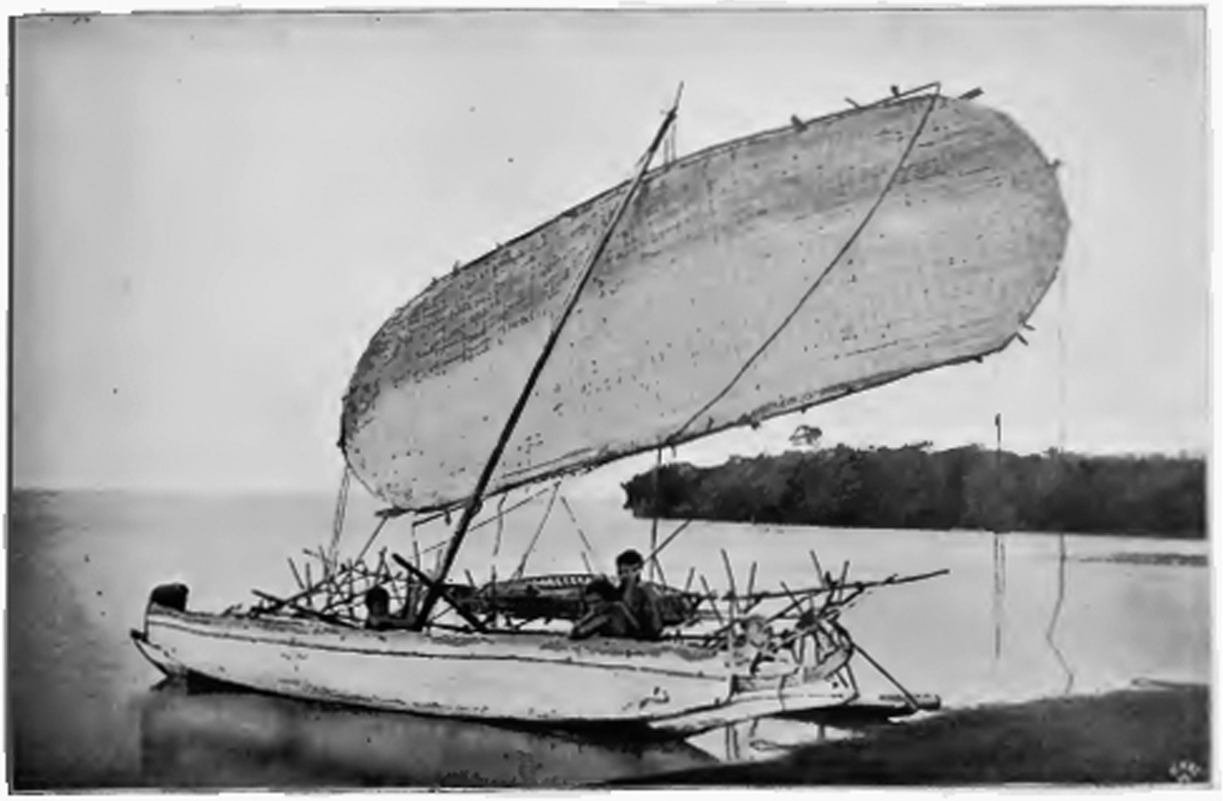
In the last two years, quite close to the main station, some of the mountain tribes, the Koiari which live on the slopes of the Astrolabe Range just six miles from Port Moresby, and their allies the Uberi and Hegari tribes, have set the police troop in motion. [359]

Port Moresby is not only the headquarters of the government, but also the main station for the central district. The whole of British New Guinea is divided into four large districts. The western district stretches from the Dutch–British border to the Aird River; the central district from there to the South Cape; the eastern district from the South Cape to the German border; while the Louisiade and the other islands situated in the south and southeast, form the southeastern district. The heads of the main districts are the four Resident Magistrates; in the four heavily-populated districts, which are very much in need of constant supervision, as in the northeast ithe Mambare district, and in the east the Rigo and Mekeo district, there are special government agents under the Resident Magistrate. The Rigo district, formerly one of the most hostile towards the government, has now become one of the most peaceful. In the event of any unrest, the six police-soldiers and the twenty village policemen stationed there would soon restore peace. The Rigo natives offer a helping hand to the administration by creating paths and planting-out coconuts. Mr Charles Kowald, the long-standing leader of the Mekeo district, which was not easy to govern because of its large and somewhat impetuous population, died in 1896 unfortunately as a result of careless handling of a dynamite cartridge. He had made his station into a model station in the Protectorate, and was very energetic, particularly in road construction in his district. The traders in the Mekeo district are particularly concerned with copra and wood production. In the western district, on the other hand, there has been no European settlement so far. Its new main station on the island of Daru has proved to be much healthier than the former station at Mabudauan on the mainland. A detachment of ten police-soldiers and thirty-six village policemen stand at the disposal of the Resident Magistrate, but in recent times the peaceful conduct of the natives has given no cause for intervention. Even the stubbornWabuda people have become peace-loving. The population of this district is the least morally-pure in the Protectorate, and judicial interventions for sexual offences are more frequently required here than in all the other districts put together. The newly-built prison has therefore not been empty for long. The erection of a stone harbour breakwater on the swampy coast of the island has satisfied a long-felt need. [360]

The main station of the eastern district of Samarai lies on the small Dinner Island. High up on a hill dominating the island stands the government building. Nearby are the storage buildings of Kissack & Thompson, who established a branch here in Samarai, engaged in active trading mainly with the natives of Milne Bay. Rubber forms the main trade item. Roading has also made quite good progress in the last year. The Milne natives are very often seen as visitors in Samarai, but also like to be hired as workers for shorter or longer periods. The station became healthier only in the last year, when a large swampy area near the station was filled in after much time and effort. Apart from the government buildings in Samarai there is a customs house, a store and a prison.

The developing northeastern district (Mambare) lost its superintendent only in the last year, during construction of a new station at the confluence of the Tanapa and Mambare. Mr John Green, who had accompanied the Governor on several of his major expeditions, including the Owen Stanley Mountains, was said to have had an outstanding colonial ability. All the more so, is

Plate 28



Canoe with a mat-sail, from British New Guinea

Village in British New Guinea

his loss to be deplored; he is not the first European to have fallen victim to the local natives' lust for robbery and murder. He always had the well-being of the natives at heart; slaughtered along with him were four police-soldiers and four others of his coloured companions. His death has been avenged by the Governor and the station has been moved closer to the coast.

The main station of the southeastern district is Nivani, which is situated on a small island of the Boine group. A small section of the police-troop and sixteen village policemen provide security for the controlled-area. On Nivani, as on all the rest of the stations, several thousand coconut palms have been planted out; some trees are already viable. Likewise, the produce from several vegetable gardens, where tubers, bananas and the like have been planted, obviates the need for the station manager to buy food for the station. In this connection, Daru and Rigo have been exemplary. Currently among the most trustworthy tribes in this district are the Misima people; the most backward in culture are [361] the natives of Rossel Island. The present head of the Nivani station and the entire district finds great help and support from the Wesleyan Mission stationed here in Panaietti.

In total, four missionary societies are active in the Protectorate: three evangelical and the Catholic mission of the Sacred Heart of Jesus. The other two [*sic*.] evangelical missions are the Anglican Mission Society and the London Mission Society. The Wesleyan mission field is the southeastern district. It comprises four European and four indigenous missionaries. The main focus of its mission is to educate Papuans as teachers and, at the same time, to train them to be capable agriculturalists who, through their example, will in the end accustom their countrymen to consistent work habits. The Anglican Mission's area of conversion extends northeast, from East Cape to the German–English border. Their efforts are hindered by the fact that they do not have a sufficient number of European teachers at their disposal. The real area of the Catholic mission is the Mekeo district; during its ten-year existence it has established just as many stations on the coast and inland. This mission is at a disadvantage to the others in several respects: firstly, they are hindered in their work by the strict rules of celibacy. Then, the climate on both Yule Island and the entire Mekeo district is considerably worse than in the areas assigned to the other missions. The Catholic Mission consists of six Fathers who are ordained clergy; six lay brothers, mostly Dutch and West Germans, who are all skilled tradesmen; and seven sisters. At their head is an archbishop, with a bishop supporting him. The religious language is French. Of great influence on the religious upbringing of children is the presence of mission sisters, which is even better than men understand, in the influencing of a child's mind. The language of instruction in the Catholic mission schools is the Maiwa dialect, in which the missionaries have compiled several lesson books, and particularly song books. For the time being, the requirement for adults to go to school and to be converted has been waived; only here and there does it happen that an adult has any understanding of the teachings of missionaries.

Also, the primary aim of the evangelical missionaries is [362] directed toward the awakening of the religious sensibility of the children. The latter like to listen to the biblical stories told to them by the missionaries and the missionaries' wives, and they enjoy even more learning the spiritual songs sung to them with simple melodies. In addition, the children have reading and writing lessons at the beginning; but what really attracts the cheerful children to the mission school is the singing lessons, for all Papuans from their youth are passionately devoted to singing.

The London Missionary Society can look back on their activity so far with the greatest pride; but it has to be remembered that the Mission has been in the country for twenty-five years already. In the big mission school in Port Moresby they train their pupils (Papuans) to be teachers who will subsequently be in a position to teach and inspire their countrymen both in the English language, and in education and godliness. This mission's teaching-area covers the entire Protectorate: in the western district and the Fly estuary the teacher is Rev. James Chalmers; in the

central district, Rev. A. Hunter; and in Kwato in the east, Rev. C. Abel, and all are eager to proclaim salvation to their pupils in the English language as soon as possible.

We note that the Government of British New Guinea, in their efforts to bring the blessings of civilization to their protégés, finds strong support from the Mission and that, on the other hand, it is not stopped by elements that, like some gold miners and traders earlier, have shown Europeans in the worst possible light to the natives. Murders of Europeans by natives, which were formerly the order of the day, still occur in isolated cases, but as we have seen, in almost every case the guilt was to be ascribed to the victims themselves. We also hear often enough of the hostilities and obstructiveness of the natives towards their protectors, yet the native-friendly, though on the other hand very energetic, ten years of administration by MacGregor, who treated the natives like his children, convinces them that people want to be useful to them and not to hurt them. They have seen how much better their situation has become, compared with earlier, and they gratefully acknowledge this almost consistently through their obliging willingness to serve such a government. [363]

If the Administration will just be successful, through further regular, intelligent consideration of the natives' origins, in continuing to gain their confidence, and to evaluate the products of the land through steadily greater penetration into the interior, then New Guinea, the youngest of the British colonies, will become equal to the wealth and welfare, peace and civilization of the neighbouring Australian possession in the not too distant future. [364]

IX. Dutch New Guinea

1. Coast and surface form

Dutch New Guinea occupies the entire western part of the island. The 141st meridian forms the border to the east, towards the German–English sphere of influence. With England in particular, the agreement of 20 July 1895 made an exact consensus on the delimitation. According to this, the southern border begins in the middle of the mouth of the Bensbach River, at 141°1'47.9" E.; it then follows this meridian until the meridian intersects the Fly River, then goes up the valley to the 141st parallel, which then forms the border until its intersection with the frontier that separates the German, English, and Dutch possessions from one another.

The coast of the Dutch part of New Guinea, from the British–Dutch border to the Dourga (Princess Marianne) Strait, is flat and swampy. A whole series of small creeks, including the Boudara and Bominka streams, flow into the sea immediately west of the British border. The only notable rivulet in this entire stretch is the Daraska or Oranien River. The area has been little explored, only the Englishmen Bevan and Strachan have touched on it in recent decades during their journeys to northwest New Guinea, while the Dutch Lieutenant Kolff has visited it during the twenties of this century. The beach is dotted here and there with coconut palms; only seldom [365] are native settlements seen on the marshy coast. A few kilometres from the Dourga Strait several small coastal rivers empty, including the Koioika, Baraka, and Wamtuzaka.

Dourga Strait itself (7° 45' S., 138° 4' E.) separates Prince Frederick-Henry Island from the mainland, and has a width of fifteen kilometres at its northern entrance. The west coast of the island, which is sparsely populated is called the Iyuri Coast; in the extreme northeast this projects into Cape Kolff, and in the southwest into False Cape. The stretch of land from the Princess Marianne Strait to the Oetanata River is called Timoraka or Kapia. The physiognomy of the coast also retains its swampy character. The first major bay in the southwest of the Dutch protectorate is Pisang Bay, with Cape Steenbom in its southern corner; two small creeks discharge shortly before this point; in the middle of the bay is a small, inhabited island. The two watercourses west of the bay, Utanata and Wamuka, both most likely come from the Charles Louis Mountains, as its last foothill, Mount Lakahia, (about 4°15' S.), rises very close to the coast.

The next bay is Etna Bay, made infamous because of many murders by the natives. Continuing westward, this is followed firstly by Triton Bay with several small offshore islands, and then Speelman Bay and Genoffo Bay. Near Speelman Bay, Miklukho-Maclay discovered the great Lake Kamaka, only a few hours' walk from the coast, at the beginning of the 1870s. The island of Aiduma lies on the meridian between Triton Bay and Speelman Bay; Iris Strait separates this island from the mainland. Speelman Bay (discovered in 1678 by the merchant Keyts and named after the then-Governor of the Dutch East Indies) is framed by high, wooded shores; at its entrance lies the island of Namatotte.

The next coastal inlet is the Bay of Kainani or Kamrau Bay, which is separated from the preceding bay by only a narrow tongue of land. The Orangien–Peninsula extends between Kainani and the following Sebakor Bay, and beyond it the Onin countryside. A small coastal river, the Karufa, drains the southeastern part of the peninsula. Lying offshore from Kamrau Bay is the elongated, coral island of [366] Adie. The big MacCluer Gulf forms the greatest western inlet in Dutch New Guinea. Several small, densely-wooded islands are scattered in this gulf, intersected by deep channels. Among these islands, in the south of the gulf, at approximately 2° 45' S., 132° 30' E., is the small island of Seka (Segaar).

Patipi Bay and Sekar Bay cut into the south of the gulf; both are well protected by small offshore islands. The densely-wooded heights rising in the southeast of the bay offer a picturesque sight for sailors passing by; otherwise, the coast along the bay is muddy. The stretches of land to

the south of the bay are, from west to east, Jawisa, Kuwansori, and Witehauri, in the last of which the Jukati River flows into the sea. The river rises in the foothills of Mount Saripun (950 metres) and receives the Gurumeul and Groben. A few kilometres upstream from the mouth, the river divides into two arms: the upper and the lower Jukati. From the right it receives the Waromba, Tatani, and Wassina (Meyer map, 1875). Several small islands lie in the river, the most important of them being Utrakemi and Kemon. Slightly north of the Jukati several small rivers are worth noting, among them the Arunum, Batan, Skroti, Unanim, and Assassination Creek.

Beyond the Juwisa [*sic.*] countryside in the south of the bay, the coastline projects westward; far out in MacCluer Gulf is the big island of Wenim or Sabuda. On the northern bank of the Jukati is the uninhabited foreland of Urako, and in the west-northwesterly direction the Kawirispei area and the small, offshore island of Marori. Beyond this stretch of land an inhabited territory begins; the biggest village is Pereperam inhabited by the Lesser-Rajah, who dominates the area. The north coast is little known.

In the west of the Dutch Protectorate are the big Aru and Kei Islands. About 60–80 nautical miles to the northwest are the Matabela Islands, and about 20 nautical miles northwest of these are the Karl-Albert Islands. Finally, in the northwest, are Gebe; Salawatti with the main town of Samale; Misool, with the villages [367] of Kassien and Batanata; and in the north the island of Waigu (first visited in 1774 by the Englishman Forrest, and later by the Frenchman Freycinet aboard the *Urania*; it is densely populated, with a mixed population of Malays and Papuans), with Numas, Agoan, Asia, and numerous other less-important, smaller islands. The most significant of the Kei Islands are Big Kei and Little Kei; they are mountainous and romantically-wild, poor in quadrupeds and birds, but very rich in magnificent butterflies. The most important members of the Aru Islands, southeast of the Kei Islands, are Wokan, Kobrur, and several smaller islands. On the smallest and westernmost island is the main town of Dobbo, with a spacious harbour (cf. Plate 30).

Like MacCluer Gulf in the west, the biggest bay in the east of the Dutch Protectorate is Geelvink Bay, with the main trading centre at Doreh. This bay was discovered in 1705 by the Dutch warship *Geelvink* from which it takes its name. It became better known later after the visit by the Dutch warship *Circe*. The bay contains coral reefs, and provides difficult access for ships. Two-hundred-metre mountains rise on the mainland in the background. Off the harbour of Doreh lies the small island of Manaswari. The Andei River flows into the harbour from its source among the foothills of the Arfak Mountains. These mountains also send a series of waterways to the coast, such as the Bripi, Maroni, Imari, Warmarei, Usei, Seikuasi, Pravi and Warmen. Mount Arfak (about 900 m), the highest point in the Arfak Mountains is said to be an active volcano, according to Dr Bernhard Meyer. Other peaks worthy of mention are Mounts Mosiri (600 m), Wampen (400 m), Wumpsini or Engulir (400 m). Entry to the Andei River is made difficult by sandbanks and a high surf. The bay into which the Andei flows lies open to the east and does not provide the slightest protection for ships anchored there. The foothills in the north of the bay are called Kwasidori. The beach stretching to the Joppengar peninsula is a swampy coastline irrigated by several watercourses. The coastal River Mum flows in at 1° 50’ S., and at 2° 35’ S. the Wapari, whose mouth was the embarcation point for Dr Meyer’s expedition in 1873, impassable for even small boats. The Wapari arises on Mount Mesmeri (400 m). [368] Several kilometres upstream it forms a pretty waterfall near which there is said to be gold. The Mesmeri, in its highest elevation, is composed of immense boulders, and has the appearance of crushed limestone masses (Meyer, 1875:1 *et seq*).

About fifteen to twenty kilometres north of the mouth of the Wapari, a short distance off the coast, the oblong island of Amberpon extends in a north-south direction, roughly between 2°5’ and 2°20’ S., and somewhat southeast of this, the islands of Meoswar, Ron, Arian, Yob, and Angarmeya. Toward the northeast are the big islands of Mysore and Yobi, with Meosnum and Mefur to their west. The latter is the home of the once-powerful Mefur tribe, nowadays not heavily

populated, but still inhabited among the densely-forested hills 300–500 metres high. The beaches of these islands are coral limestone. The main village on Mysore is Kordo, situated on the coast in the northwest of the island with several small islands strewn in front of it. Cape Rombo (Saavedra) is the extreme northwestern tip of the island; it is drained by several insignificant rivers. The large island of Yobi, also called Yapen, Yoppengar, and Yob, has a suface area almost double that of Mysore. Between Yapen and the small island of Ansus to the south, there is good anchorage for ships arriving from the south. Yapen's interior is mountainous. The mountain ranges stretch from west to east, rising to 700 metres at Mount Bonkuari. Offshore to the southeast of the island is the throng of small Padaweido islands. Further eastward lie the Arimoa Islands, and in the south of the bay a few small, insignificant islands, with only Moor and Mambansawei standing out.

South of the Wapari River the mainland coast runs in a southeasterly direction, until east of the small Karobi River it suddenly turns northeast. Near the small island of Ron the coast projects markedly as the Yoppengar Peninsula. The stretch of land between this peninsula and the Wapari is called Wandammen, and further northwest it is called Wendessi. Bare, grass-covered mountains skirt the coast southeast of Yoppengar as far as the Rubi River which, like the [369] Karobi only a few kilometres to the east, arises in the Karobi Mountains not far from the coast. These mountains rise to 700 metres, while the Tafelberg to the east reaches almost twice this height. Not far from the Tafelberg one of the few lakes in Dutch New Guinea,Yamoor Lake, lies hidden. Several small creeks drain the coast between Karobi and Cape Elephant, the eastern boundary of Geelvink Bay.

The coast from here as far as the mouth of the Ambernoh has a low swampy appearance, with very little population or none at all. The Ambernoh, the biggest river in the Dutch Protectorate, navigable for sixty miles, flows into the sea as several branches, near Cape d'Urville; it is called Mumberan by the natives, also the Rochussen River. Two lesser-important rivers, the Wiriwai and the Witriwai, empty into Walckenaer Bay, further southeast. Southeast of the Arimoa Islands, several large islands, like Lamsulu, Jamma, and the Podena Islands, lie off the coast.

The land along the coast from Walckenaer Bay to Humboldt Bay is called *Papua Telandjang*, a name derived naturally from the Malay ships' crews that visit frequently. This coastal stretch is drained solely by two small watercourses, the Barowai and the Sikiawe. The final three indentations in Dutch New Guinea before the German border are made by Matterer Bay, Sadipi Bay, and then Humboldt Bay at 2° 42' S., 140° 54½' E.

Humboldt Bay became better known through the *Etna* expedition in 1858. It was visited later, in 1871, 1875, and 1881, by Dutch warships, once by the English expedition ship *Challenger*, and, more recently, visited repeatedly by the German researcher, Finsch. It forms a large oval, ten kilometres long and seven kilometres wide, and is bordered southeast and northwest by two limestone cliffs Cape Bonpland and Cape Caillié about two hundred and fifty metres high. The massively-high ridges that surround the bay gradually fall to the seashore. The inner harbour is separated from the outer harbour by a low, narrow tongue of land; a strait two hundred metres wide allows entry. Half a kilometre northwest of Cape Bonpland the foreland suddenly disappears. The promontory that then rises is called 'Sekko' by the natives; the nine-hundred-metre-high mountains behind, extending to the west of Humboldt Bay 'Euwaka'. [370]

2. The Population

a. Colour and Body-build, Appearance, Clothing, and Jewellery

Just as fragmentary and incomplete as our knowledge of the land, is our knowledge of the inhabitants of the Dutch Protectorate of New Guinea. In general, however, the natives differ from one another in growth and appearance, customs and habits, just as much as anywhere else on the island. Skin shade varies from the deep black of the Negro to the light brown of the Malay; here and there an albino. Finsch found them in various places and, during his three months' stay in Sekar, Kühn encountered a boy aged ten and a woman of about thirty, both of a reddish skin colour with blonde, woolly hair and blue-grey eyes; the boy was a slave of the Raja, the woman, married to an ordinary Papuan, was a free person. One finds big, sturdy, and robust figures, with very finely-formed features alongside small, dwarfish, and ugly men; here luxuriant woolly hair, there straight hair.

In appearance and culture, according to the unanimous judgement of the experts on Dutch New Guinea, the rough and wild Papuan tribes on Princess Marianne Strait make the least favourable impression: an ugly breed (Finsch 1865:50 *et seq*.; Waitz, 1864:535) curly-haired, with a dark-brown skin shade that often merges into black, a flat nose and thick lips, with wide flaring nostrils and dark, greedy eyes. To the south of them lives the tribe of the Tugeri, so troublesome to their neighbours over the British border, and so remarkably different in appearance from the inhabitants of the Marianne Strait. In skin shade they vary from very light to bituminous coal-black; they have hazel eyes and protruding foreheads.

From the Princess Marianne Strait to the Utanata River we are faced with a coastal population with an elongated oval face; slightly-projecting cheek bones; very broad, flat nose whose sides are often pierced; a large mouth; very thick lips; artificially-pointed teeth; gently-curving, high forehead; big eyes, and very-prominent eyebrows. [371] The women here are strikingly ugly. Their skulls are more rounded; their hips and buttocks strongly developed on an otherwise frail, delicate frame. The people have an average height of 1.60 – 1.75 metres.

The natives of the small island of Lakahia on the Utanata River are said to present an exceptionally fine body form. In Triton Bay we find a mixed race of Timorese and Papuans, with reddish-black, frizzy hair, broad face and a frail body. All intermediate stages in external appearance, from almost-pure Malay to pure Papuan, are offered by the Waigu Islanders. By and large, they look very similar to the inhabitants of northern New Guinea — a face with small, deep-set eyes, broad cheekbones, a thick nose, very good teeth, and prominently-projecting lips. Their black hair is frizzy or straight, skin shade brownish-black, their body unusually thick with slender legs. Beards are rare. They are similar to the inhabitants of the island of Gebe with a hybrid Malay-Papuan mix. A strong, muscular people, generally much more powerfully built than the coastal inhabitants, are the Wuka or Alfurians, as the inhabitants of the MacCluer Gulf are usually called. They were previously regarded to be quite different from the Papuans. Dr F. Müller introduces them by the unique name of "Mairassi"; others call them "Endamans". However, apart from small differences in appearance and habits they do not differ much from the shore-dwellers. In general they are less intelligent than the coastal people. They belong to the same, single tribe, and the slight differences are explainable in the same way as, for example, those between our Alpine peoples and the Uckermark people. The Alfurians owe their unusually muscular physique to their practice of mountain-climbing, where they show great strength and endurance. They move with the greatest rapidity on flat ground, and leap more nimbly than a dog into a steep thicket to fetch a shot bird. They climb the steepest slopes without the slightest effort. Generally, they have no permanent residence, and the least opportunity prompts them to leave their huts and go somewhere else for months on end, or not to go back to the previous site at all. [372]

In Geelvink Bay we find people of a beautiful physique and dark-brown skin shade, sometimes merging into pale-brown, at others into dark-brown. Their forehead is high and narrow; their eyes dark brown. In other respects they present the same physiognomy as everywhere else: the curly hair, and the thick slightly-raised lips; although the cheek bones of some individuals do not project as markedly as elsewhere among the Papuans.

The inhabitants of Doreh and the surrounding region are small and thickset, otherwise they are of the same appearance as all the other inhabitants of Geelvink Bay. In the Arfak Mountains, rising immediately beyond Doreh, the population is quite sparse. There are no huts until three hundred metres: at this altitude because the inhabitants are subject to constant attacks from the Doreh and Karon people. Physically and morally, the people on Humboldt Bay are at the highest level; they are of medium size and are more powerfully built than almost all other Papuan tribes. They have quite a dark-brown skin shade; black woolly hair; fiery, dark eyes that express courage and cunning. Thick lips, a broad nose with flared nostrils, and a pointed chin spoil their otherwise intelligent face. The boys and girls are always pretty and happy here, and the women too are not as ugly as elsewhere. The men look very wild: they wear their black hair in a round ball on the top of their head, and bound together in smaller balls around the head, often as many as ten. Others spread their hair into several large beads: two on the forehead and one on the back. A three-pronged comb serves as an ornament. Sometimes men grow a brush-like comb along the crest; wigs are found here and there too, worn by bald-headed men. Quite often the hair is stained with lime to a yellowish-red colour or powdered with red loam. Women braid their moderately-long hair. Tree leaves, ferns, poppies, as well as crown pigeon and cockatoo feathers, and occasionally the much-sought-after bird of paradise feathers, serve as hair decoration.

The natives between Humboldt Bay and Geelvink Bay twist their hair into small cords and skilfully intertwine them with [373] a coconut palm frond. These cords are then fastened into the hair at shoulder height and cover the back. In the western part of the Protectorate too, the natives groom their hair very carefully, even the least-civilized, wild tribes on the Utanata River. These people plait their hair into long, regular braids with flexible rush pistils serving as supports (Finsch, 1865:50); others wear a hairnet on the back of their head, or have their hair tied together in big knots. The most convenient hairstyle is worn by the natives of Aiduma, who cut their ‘wool’ very short. The Kainani men wear their hair in short braids, while the Papuans on Geelvink Bay, already strongly under the Malay influence, who earlier wore their hair twisted into several bundles around their head (Finsch, 1865:125), now soften it with oil, and comb it finely with combs made of bamboo or thin wood.

As for clothing among the Papuans in Dutch New Guinea, it can be considered only there where they have already had more contact with the outside world. The natives on the southwest coast and also in the east on Humboldt Bay, less touched by culture, go about almost totally naked. On the Utanata River the women tie on a big shell to cover their genitalia, while the men wear a bamboo box for the same purpose. They rarely have skirts plaited from plant fibres. On Humboldt Bay the men usually wear a belt-like string around their torso, with their genitalia wrapped in leaves. Waitz (1864:575) sees in this peculiar custom, probably quite rightly, the very foundation of men’s clothing, and attributes this to a religious belief. The navel, which was covered by the cord, was sacred; it would be hidden from the eyes of the world, like the glans penis, as a life-giving force; this also explains why little boys, who still lack this power, have their glans uncovered. Adults are just as little anxious to conceal the male member, even though it is usually raised at the same time as the glans and is attached to the cord. However, it is so imperfectedly covered that it is easy to [374] see how little the nature of this clothing arose from the feeling of modesty. Married women on Humboldt Bay wear a big piece of *tapa* around their hips. It is fastened with a large rope and decorated with colourful paintings. Men’s clothing is occasionally the *maar*. It consists of a strip of bark which, as in Kaiser-Wilhelmsland is gently beaten before

use and, like there, is initially secured around the body then drawn between the legs and fastened together at the back. The ends project downward in front and behind in the form of bands, which are decorated by coloured lobules like a fringe. For the *maar* the Papuans east of Geelvink Bay use *pisang* bast-fibre a very-thin, easily-tearable material instead of tree bark.

The Alfurians, who formerly wore a skirt made from the bast fibre of the paper mulberry tree, today wear cotton, which they put on in the same way as other natives put on the *maar*. By and large, wherever the natives are free of foreign influence, they have the same costume; in areas of frequent contact with Malays and other foreigners, foreign influences appear quite quickly in regard to clothing and jewellery. For example, the women of Geelvink Bay now wear the Malay sarong; only the slaves are content with the *tapa* skirt. The Lobo natives too, totally under Malay influence, go around dressed in cotton shirts and trousers, and wear a cloth around their head. The exceptionally-pretty women here are also dressed in shirt and sarong; the breast is uncovered. Likewise, the Kainani women have already accepted the sarong. Even in the Arfak Mountains in Geelvink Bay (Hopp, 1882:201 *et seq.*) clothing already consists in part of calico or blue cotton, which is drawn between their legs.

Despite their generally deficient clothing, the natives of northwestern New Guinea, as well as their brothers in the southeast, have a great love of jewellery and of decorating their bodies.

A peculiar headdress is worn by the wild [375] Prau people, virtually untouched by civilization, in the MacCluer Gulf — a ring made in the style of a Spanish cactus (Kühn, 1888:115). Their neighbours, the Alfurians, wear a few feather ornaments on their head, sometimes consisting of the large feathers of the cockatoo. Into the quill of these they like to insert the blue tail feathers of the kingfisher or the bird of paradise. Further southwest, there is a headdress popular among the Utanata people, assembled from finely-split bamboo and wallaby fur and decorated with cassowary and cockatoo feathers (Finsch, 1865:58). The only ‘hats’ in the Dutch Protectorate are worn by the natives on Humboldt Bay, and then only on festive occasions. They are made of pumpkin shells painted black, white or red, and are usually kept in the meeting house. Forehead-jewellery seems to be rare and primitive; among the natives on Humboldt Bay it consists of two to five clam shells strung on a band. To the west, between the latter and Geelvink Bay, they often fasten a big shell or a feather of the black bird of paradise flat or upright on their foreheads as an ornament; according to d’Alberti’s account, the Arfak in the interior from Geelvink Bay love to wear a band that they call *lueza* around their forehead. It consists of a piece of broad, very-supple bark which is inlaid with small, white mussel shells. Its narrow ends are tied together at the back of the head. The women substitute this ornament with shell discs called *beree*, often three or four of them adorning a woman’s forehead.

In the perforated nasal septum the Arfak wear the *zigau*, a small, finely-polished piece of white mussel shell (Hopp, 1882:201 *et seq.*). There are natives between Geelvink Bay and Humboldt Bay who pierce their noses three or four times. As adornments they add dog and boar teeth and, if they have nothing better, simple bamboo sticks or tree bark. The people of the Utanata River adorn their pierced nostrils with little pieces of wood, or feathers. Often the nostrils are artificially widened and the ears elongated, especially among the Papuans west of Humboldt Bay. Little pebbles, [376] bamboo, and rattan serve as ear pendants; the earrings are made of rushes, like the natives of the southwest coast; of mussel shells like the Arfak; and of gold leaf as on Aiduma. Here the natives also have earrings of copper and silver; turtleshell earrings are seen just as often as on Geelvink Bay to the east, while the Utanata people in the southwest are just as content with old cigar butts as earrings. Occasionally the latter also wear peculiar jewellery around their neck: human teeth strung on a band, while elsewhere in Dutch New Guinea dog, pig and whale teeth are generally used for necklaces, especially on Humboldt Bay. Poorer people use bast-fibre or leaves, which they also like to leave hanging in bunches down their back.

The Papuans adorn both the upper arms and forearms with bast-fibre plaiting, mussel-shell bands, or with two rings made from boar's tusks. This latter ornament is very popular among the Alfurians; the Arfak women have adopted brass bracelets, through the Malays.

The women often substitute absent jewellery by colouring their face or body with red, black, and white dyes. Besides red ochre and charcoal, they also use lime as a dyestuff; a finely-sharpened piece of wood serves as a paint brush. The colours themselves are applied with coconut oil. The natives along the entire southwest coast of Dutch New Guinea regard the filing of their teeth as a further substitute for body decoration. This is practised especially among the natives of the Utanata River.

The tattooing and the burning or incision of various figures into the skin, the former mainly in the east and the latter mainly in the west, are still a generally popular external decoration. Rubbing the body with coconut oil serves more probably to protect the body against the burning rays of the sun, and mosquitoes, rather than as adornment. The residents of Princess Marianne Strait, the Kapia and Utanata rivers further north on Speelman Bay, and finally the Alfurians, burn long streamers on the upper arm, shoulders and chest with a glowing coal; the Aiduma on the other hand, only a small spot between the forehead and the eyebrows. Tattooing, which is known to be of Polynesian origin, [377] has achieved far greater importance: although it appears much more crude and awkward than in Polynesia, and almost exclusively on the part of the women. The latter tattoo mainly the loins and back, while the men tattoo more the arms, chest, and shoulders in this manner, by drawing lizards, snakes, and fish. Among the people, simple, burnt-on spots are a sign of sea voyages undertaken. Waitz (1864:575) seeks to find the reason why women adorn particularly the places indicated above, in the following: "The women tattooed their backs because they bore things of men, who were more sacred than the women; the loins and the abdominal region because, through the tattoo, they wanted to dedicate the fertile womb to the spirits and to conceal it from profane eyes." Tattooing among the natives west of Humboldt Bay is unknown, and is carried out only by local women.

b. Dwellings, Household items, Tools

Their dwellings are usually pole houses, which stand partly in the water and partly on land. The best houses are found among the inhabitant of Humboldt Bay, the worst on Princess Marianne Strait and among the Tugeris, who have no fixed abode. Huts are scattered here and there on Princess Marianne Strait. They consist of four unhewn branches rammed into the ground and roofed over with tree bark, and so low that you can only sit bent-over beneath them. Similarly shabby dwellings are found in the Kapia and Utanata rivers. They are erected on bamboo trunks only five feet high and six feet wide and, moreover, like the ones described, although very much longer: often one hundred feet long. The huts are divided into many smaller sections, each with its own fireplace. There is no domestic furniture, not even mats; for sleeping, the inhabitants place dried leaves under their heads. Among the Aiduma people there is a variation in the hut's interior: the absence of the separate compartments, but they possess a few domestic appliances, vessels, [378] wooden headrests thirteen centimetres high and twenty-one centimetres long, somewhat hollowed out and resting on a carved foot. There are also implements for preparing sago. The first pole dwelling are found from the southeast on, in Namototte and on Triton Bay. As dwellings, some natives also use sailing *praus* (big barge-like vessels), which they trade from the Ceramese. On Speelman Bay too we find pole dwellings. However there are no discrete *kampongs* (settlements), but the houses lie hidden among the mountains. They are open in front and at the back, and therefore have only two walls and a roof. The floor of the airy building is very shaky. In order to drive away mosquitoes, they often light a fire underneath the house; the smoke can easily

permeate through the wide gaps in the rattan floorboards. (‘Mosquito’ comes from the Portuguese, and means gnat. These gnats are one of the greatest plagues of tropical lands, since the tiny blood-suckers — only the females bite, and suck blood — are hard to keep away at night, and, with their annoying humming and their unpleasant, burning bite, often rob people of sleep). In these dwellings mats are the only household items.

On the island of Adi too, the houses stand on poles 1⅓ metres tall; the houses contain two rooms on either side of a central passage, and each has a door on the front and rear walls. A family lives in each room. A notched tree trunk, leaning against the house, serves as a staircase. Mats serve a double-purpose, as flooring and as bedding.

The houses on MacCluer Gulf are similarly constructed. At Sekar, in the southern corner of this bay, the huts, built over the water on a multitude of piles, are all equipped with a door and a platform from which a ladder leads into the water, to the canoes tied to the house. The houses are interconnected by an insecure bridge, 6–12 inches wide, consisting of tree trunks or rough planks laid side by side. In the cannibal village of Prau, three days journey north of Sekar, we find dwellings 170 metres long, built partly over the water, partly over land, often giving shelter to 150 people. These houses too are divided into two halves by a long passage. On both sides is a series of chambers, whose doors lead out into this passage. In front of the two exits at either end of the aisle, [379] are large platforms (Kühn, 1888:115 *et seq*.). People go down to the canoes or to the ground or, from the ground up to the floor by means of ladders. The walls are clad in thick stalks of sago palm in such a way that one stalk is nailed to another. In this way they gain very great strength and a pleasing appearance. The roof is covered with *atap*. The dwellings of the Rajah, (Mohammedan chief), on MacCluer Gulf are constructed no better than those of their subjects. The English captain Strachan, who visited Rajah Abdul Delili of Roeambatti in the mid-eighties, describes his “*palais*” as wobbly, and extremely badly built. The entire furniture consisted of a four-legged table, two armchairs, and various crates and boxes grouped along the walls, while the floor was occupied by a white mat.

In the easten part of the Dutch Protectorate, the natives between Humboldt Bay and Geelvink Bay have the most primitive dwellings: low pole buildings about four metres above the ground and without any furnishings. A bamboo tube is used to blow the fire, a mass of dried leaves as a bed, and a mat as a bed cover. Water is stored in bamboo containers. The dwellings of the inhabitants of Humboldt Bay appear to be very good, and clean. “The pearl of Humboldt Bay and the pole-building Mecca of the Stone Age” describes the village of Tobadi at the northern entrance to the bay. There the houses (Finsch, 1865:141; 1888:350 *et seq*.) rest on stilts that rise one metre out of the water and have less-strong crossbeams. The floor is assembled from narrowly-split slats of the betel palm, and looks very clean and smooth. Three-metre-high walls made of bamboo staves are fastened to this floor, and above it rises an elaborate hexagonal, or octagonal, pointed roof, whose support in many houses is a single pillar rammed into the water. The pillar is formed from squared-off tree trunks slanting in towards one another. Here, the roof is also covered with *atap*, and is often crowned with a wooden disc. Platforms are erected before the two opposing doors, which admit the light. The platforms protrude two to three metres [380] above the water surface, and are likewise on poles. The platform consists usually of rotten, wobbly boards that are often salvaged from canoe sidewalls.

Square frames filled with sand serve as fireplaces. The interior is usually divided into four fairly-equal rooms by four partition walls. In the middle one is the hearth, directly under the roof ridge so that the smoke can readily escape. Where possible, a sort of hurdle is mounted above it as an apparatus for smoking fish. Each house serves as a home for only one family. A wooden figure, *karra-karrau*, is placed above the roof of every house, depicting a man or a woman in a crouching position. It is carved from the lowermost stem of a type of palm. Numerous pig skulls and turtle shells are fastened to the walls as decoration, as well as fishing nets and pig-trapping nets, the

latter plaited from thick cords, and weapons. As household items, we find earthenware pots, exquisitely-fired from red clay, and the indispensable headcloth. Most household items are hung up, in Finsch's opinion as protection against the extremely-annoying rats.

The pole buildings of the Papuan tribes on Geelvink Bay resemble an upside-down canoe, dropping down very low towards the sides, and are only a few feet high on the long sides. The central aisle, which divides the house into two equal halves, and divided on each side into several equal-sized chambers for individual families, is sufficiently high that a person can stand upright without hitting his head on the roof. The *prau* is usually suspended under the roof. According to missionary Hasselt, who lived for many years at Mansinam on Geelvink Bay, who will later live together in it usually combine to build the house. On the sea- and landward sides there are usually verandahs, the former serving as a place for the men, the latter for the women. The houses are connected to the land by a somewhat shaky bridge. The furniture is more sumptuous than in the houses on Humboldt Bay. Besides the mat, we find a box-like container woven from tree leaves, which replaces our clothes locker. A glance inside often reveals valuable family heirlooms, which are rarely [381] put to use, for example copper kettles, bowls, earthenware plates, silver bracelets, knives, corals, sarongs (unsewn, cotton item of clothing slung round the hips like a skirt), and all kinds of trinkets such as glass beads, tobacco pouches, little bits of wood etc. that serve as a knife and fork, and so on. Wooden troughs, provided with a lid, serve as food containers, with large quantities of rice and sago. Produce is usually stored in sacks. Unique in their style in New Guinea are the neck rests on Geelvink Bay; both raised ends of the little bench are decorated with carving and run into a type of bust, which bears a great similarity to a sphinx. The figure has two hands, with a small stave in each. And finally, in the chambers we come across fishing nets and cooking pots of all kinds; among tools the *maar* beater, that is, a notched piece of wood, several spans long for beating the *maar*, (man's skirt made from bast fibre, see page 374 above), into suppleness; a kind of broom for catching small fish; a wooden disc and a round stone for making pots; and finally, here and there, a hatchet or chopper.

Virtually all the dwellings on Geelvink Bay are like the houses described above. In Doreh the houses are arranged in two rows in the water; their gables are unusually high, and the side facing the sea is more pointed than the one facing the land. Here not uncommonly, beside the main house we find a smaller one, where, after the death of the husband, the widow and the children are accommodated, while the clan of the deceased moves into the house that they have abandoned (Finsch, 1865:98).

The houses further inland are generally sitting on lower poles than those on the coast. In the Arfak Mountains they are used for the purpose of defence, not uncommonly with the back wall built against a cliff, similarly to what we have already had occasion to see in the southeast, in the British Protectorate. The houses are almost always far apart, and usually shelter more than one family. Interior decoration of the houses is provided by hanging human skulls and carved representations of lizards, snakes, and crocodiles. [382]

c. Employment, Hunting, Fishing

The occupation of the male native population of Dutch New Guinea also is restricted to building the house, making canoes, laying out gardens, sewing nets, fishing, and hunting. The woman takes care of further gardening, fetches water, drags firewood, looks after children and the household, and makes pots during her leisure time. Like the women in Kaiser-Wilhelmsland, for this purpose she uses a stone and a wooden beater. The rest of the tools in Dutch New Guinea, as far as they

Plate 29

Trading vessels in the harbour of Dobbo (Aru Islands)
(after a photograph by Prof. O. Warburg)

Outrigger canoe at Dobbo (Aru Islands)
(after a photograph by Prof. O.Warburg)

make them themselves, are very primitive. Sharpened stones or lava, attached somehow to wooden handles, serve as hatchets. They are indeed strong enough to hack a tree, but not to cut it down, so that fire is often used to fell trees or hollow them out. Today, iron implements have been introduced in many places, particularly by Arabs, Chinese, and Malays. Stone axes are occasionally still found in the east, for example in Tabi and inland from Humboldt Bay. In addition, among their tools the native have wooden pounders to crush rice, winnowing shovels, and coconut-fibre sieves for preparing sago or for separating the chaff from rice.

Their technical ability is no small thing. The Kei islanders, in the west of the Dutch Protectorate are skilled manufacturers of clay pots. Their market for the entire surrounding area is the village of Elraling on Great Kei. Products made by the inhabitants of this place, namely clay pots, dishes, and jugs, are distributed as far as Singapore. In the east, especially on Humboldt Bay and Geelvink Bay, the shaping and firing of earthernware pots has become an outstanding branch of trade and industry. At Doreh there is an abundance of yellow clay, and at Cape Bonpland at the southern entrance of Humboldt Bay a type of red clay.

As in Kaiser-Wilhelmsland, the manufacture of clay pots is carried out exclusively by women. Often after manufacture the pots are coated with sap from a plant, or dammar resin, to give them a glaze and make them less breakable. The vessels are usually broad-based, although they come in all shapes, and are used as water containers, drinking vessels, and cooking pots. The [383] big vessels are used mainly as water containers; the smaller ones are used for cooking, and they substitute as bowls at meal times. In Doreh, the latter are not infrequently decorated with beautiful patterns and colourful paintings which, in part, represent figures of birds and fish.

In the west of the Dutch Protectorate, the Alfurians in particular have brought carving to an admirable level of dexterity. Sometimes from wood, and at other times from the teeth of the dugong, they carve their little idols and amulets, which they wear on a cord around their neck. They also carve wooden models of gold foil chains, which they have made in Macassar for their wives. The Speelman Bay natives are known as weavers of dainty little baskets, from palm fronds.

In a curious way, carving is done only by men. The natives of Humboldt Bay are outstanding in this; they are equally well-known as skilful designers of characteristic figures, which they create off the top of their heads. However they do not go beyond straight or broken lines; their favourite figure is the triangle. Brightly-painted, artistic, wood carvings decorate the vestibule and the roof peaks of their meeting houses. Inland from Humboldt Bay, the natives on Lake Sentani are known for their beautiful carvings; they also have no tools apart from stone axes, shells, and rough knives, which they have traded from elsewhere. The raw material for their stone axes comes from the stone deposit near Rusmar: the stone blocks are cut into pieces there, polished into a form appropriate for their intended use, and then brought to the settlements in question and put to use (Bink, 1894:22).

The highest degree of perfection has been achieved by the carving on Geelvink Bay, mainly in Doreh. Wallace (1869:300) writes: “Where there is only one plank available on the outside of their houses, it is covered with rough, yet characteristic figures; the high-pointed prows of their canoes are decorated in filigree work, and on canoe prows you often see human figures artistically incised. Their wooden clay-beaters, their betel [384] boxes, and household implements are also carved.” The embellishments which they give to the images of their ancestry are worked in a very appealing way. Yet carving is not everyone’s thing. Others find more pleasure in other tasks, and are skilled in weapon-polishing or the processing of shells and decorative items. Others again, busy themselves with weaving, and produce, among other things, bags made of strong, dyed tree-fibre, the smaller ones quite tasteful and often of an attractive colour. And finally they do plaiting. Mats and baskets are made from narrow pandanus leaves that have previously been dyed red, black, or yellow. When plaiting them together they intertwine these leaves so skilfully alternately that the baskets have a very pleasing appearance.

Iron working has become particularly widespread among the Papuans on Geelvink Bay (Hasselt, 1890:7). The Lobo people and the Kei islanders also understand something of blacksmithing. A stone serves as an anvil; they have traded hammers from foreigners, and constructed the bellows themselves. Hasselt describes this in detail: “the object consists of two upright bamboo tubes about three feet long. A thin, two-foot-long piece of bamboo fitted to the lower end of the tubes is used as a wind funnel. A piston, wrapped at the lower end with cloths or feathers for better fit, is found in each of the two cylinders as a pump. The piston is then set in motion by someone sitting between the two bamboo cylinders; while he pulls one piston upwards, he pushes the other one downward at the same time, so that the draught draws the fire.” The Gebe islanders are said to have introduced iron working to Geelvink Bay. A special guild is exclusive to Doreh: whoever wants to learn, must first submit to some formalities that originate from the Mohammedan teachers. He must first undertake not to eat pork any more. In his introduction he is anointed with oil and, by a spoken incantation, given protection against all the risks associated with the craft. [385]

Canoe-building is not a special trade. It is carried out by all men. Only the Melanesian form is found. All canoes, from the little practice toys of the boys up to the big sailing and war canoes of the men, which are often built for twenty paddlers, are made from logs. The vessels vary in design and decoration. The most backward in this region, as in all, are the natives in the southwest of the Dutch Protectorate. Unsightly and extremely rudimentary vessels serve the natives on Princess Marianne Strait and Triton Bay for their coastal and fishing trips. They have no outriggers, space for only two or, at most three people, and are paddled standing up. On the Utanata River there is carving on the canoes, which are much bigger here: sometimes even long enough to have room for twenty to thirty people. As they do not have an outrigger, they often tip over. The crew then quickly leap out, use their combined strength to right the vessel, bale out the water, and the journey continues as though nothing had happened. On Speelman Bay we find canoes that were introduced by the Kei islanders, hold twelve or more persons, and are fitted with a mast and sail and a built-on platform. The small canoes of the inhabitants of Adi Island also have sails, but they cannot accommodate more than eight people.

During the ebb tide the natives of the village of Prau use long boards as a means of transport. They kneel at the back and push themselves forward, first with one leg then the other against the mud. On these wretched vessels they also convey their produce: sago-bread, which is piled up in front of them on a bed of leaf ribs (Kühn, 1888:142). On the other hand, the inhabitants of the island of Sekar in the MacCluer Gulf have very high canoes fitted with outriggers.

In the east the vessels are generally better than in the west. The inhabitants of Geelvink Bay make good canoes. First of all, the tree trunk intended for the prow is cut down and hollowed out; it is then filled with water, to draw the sap out of the trunk. Finally, to balance the canoe, gunwales, [386] running parallel with the sides, are fastened to the canoe by cross-beams. Often, four or more of such canoes are combined to form a raft. Artistic carving and feather decorations adorn the forward part of the canoe. The carvings here usually represent a human head with coconut-fibre hair. Cockatoo feathers may also adorn the prow, but only when the owner of the vessel is a war hero who has already killed several enemies. The oars or paddles are usually made of ironwood, likewise decorated with carving on the handle. A jagged mat plaited from palm fronds serves as a sail; a large wooden block or heavy stone as an anchor; lianas as an anchor rope; and rattan or tightly-twisted tree fibres substitute as cordage. The sail, usually three to four metres long and eighty centimetres wide, is generally higher than the mast, and adorned at the peak by feathers. The mast is constructed in the form of an easel, and can be removed or set in place at will (Hasselt, 1891:5). No canoe lacks one or more coconut shells for bailing-out water. Not uncommonly, the natives of Geelvink Bay in their great sailing canoes can make five to seven knots in a good breeze, and often travel a hundred miles without sighting land. On their great

trading voyages they generally use the northwest monsoon, and return with the southeast tradewind. Of all the inhabitants of the entire east coast, the longest trade voyages are undertaken by the people of Doreh, who sail as far as Ternate and beyond. The war vessels, which are bigger and stronger than the rest, are likewise made from a tree trunk, and are paddled with a type of water-shovel, which the oarsmen use in unison.

The canoes on Humboldt Bay are similar to those of Geelvink Bay but more clumsy. They are less hollowed-out and fitted with an outrigger only one to two metres long. A mat platted from pandanus leaves is secured to the 2½ – 3 metre tall mast, as a sail. The canoe is tapered both fore and aft. The prow decorations here consist usually of roughly-carved birds and fish. The sides of the vessel are adorned with regularly burned-on figures, and painted white, red, or black. [387] A bunch of cassowary figures decorates the masthead. The paddles, usually 1½ metres long, are delicately carved. Here, just as on Geelvink Bay, the canoes have a platform. Such a decking is built out of bamboo in the middle of the canoe. Passengers sit here, weapons are laid down, and the firebox is positioned here. This is a box filled with sand, in which a fire is kept going. The canoes have a low loading capacity and usually hold only five or seven men; they sail badly and are propelled forwards only slowly, even with strenuous paddling. The women of Humboldt Bay have to be satisfied with quite primitive vessels: hollowed-out tree trunks without an outrigger. West of Humboldt Bay the canoes are 4½ – 5 metres long. They are paddled usually while standing up. In each canoe there is a bamboo pipe as a drinking-water container; it must hold very special value to the natives, because it is never traded at any price.

In Doreh sailing regattas are often held for general amusement. On such occasions three canoes are always combined into one sailing vessel, so that they can carry the sail better. The spectators act as judges. The prize is simply the applause that greets the winner (Girard, 1883:47). The natives of Lake Sentani hold large sham-battles on the water for entertainment; the opposing parties shoot at each other with blunt arrows.

Besides commercial purposes, the native use their vessels also for fishing. They catch fish with a fishing rod, or with nets, by spearing them or shooting them with an arrow. Not infrequently, however, they are poisoned, commonly with the root of a creeper or the juice of a liana. In Batimburak, in the south of MacCluer Gulf, the natives have even trained large sea eagles, as Kühn recounts, to catch fish. Quite often the Papuans go out fishing at night with torches in their canoes; the fish are attracted by the torchlight. It is a peculiar sight, watching the vessels fluttering in the darkness as they intermingle on the ocean.

Rod fishing is very popular. The hook is usually made of bone. Nets are made of coconut fibre, [388] or the fibre of other plants. The natives are often seen dragging a type of trawl-net, weighted with mussel shells, along the shoreline. Others use a sort of pouch net attached to a bamboo stick, and drawn along a coral-free bottom. If they suspect that they caught a fish, the pouch is closed by means of a slider. Often entire villages go fishing, with all their canoes combined. In Humboldt Bay in particular, where the inner harbour and outer bay have fish in abundance, fishing is in full swing, as it is in Doreh. In the west of the Protectorate the Alfurians pursue the larger, fearless cod, usually by canoe, and harpoon them with a two-pronged lance, or a lattice to catch fish is constructed in the following manner: from a shallow bank a narrow fence of bamboo lathes or wooden poles is erected in the sea out to a depth of three fathoms, and it is then led at almost a right angle along the shore and then in a curve back to the shore up to a depth of one fathom. In the corner a space is delimited by a double door that easily opens inwards, and the fishermen wait for a school of fish swimming along the shore; this school is easily skirted by the fishermen in the canoes, and lured into the trap with yells and similar noise. Once inside the fish are speared or poisoned. Finally, people sometimes install a bamboo lattice under a house that stands in the water. This lattice continually narrows towards the land, so that the fish that have schooled there during the ebb tide are held there by the lattice (Kühn, 1888:138). Fishing and

hunting are only sport among the natives; only the Papuans in the southwestern part of Dutch New Guinea, from Princess Marianne Strait to Triton Bay, fish for food.

Otherwise, the men focus on looking for trepang, diving for pearls, and catching turtles.

On the hunt they kill mainly birds and wild pigs. The native hunters ferret out wild pigs in the thicket and spear them, or drive them towards the sea and catch the animals when they attempt to escape into the water. The Doreh people are good pig hunters. They are also expert [389] at smoking meat. They then trade the smoked meats with the inhabitants of the interior for other products. The mountain people are skilled trackers and killers of the bird of paradise, which they catch by means of resin-coated rods or shoot down from its high perch with an arrow. For this purpose they climb to the treetops and lie there all day, on the lookout for their noble prey. Once they have killed the bird, it is eviscerated and the skin is dried. Other prey of the hunter are the possum and the small tree kangaroo; among the birds are: the cassowary, the crown pigeon, various other species of pigeon, parrot, kingfisher, and a number of other birds.

d. Birth, Childhood, and Family life

When the Papuan in Dutch New Guinea is not preoccupied with the all too frequent feuds, he leads a quiet life at home in his village and, according to his custom, a very cosy family life.

Birth, however, takes place among individual tribes, at least according to our conception, under nothing less than humane treatment. For example, on Speelman Bay the mother giving birth is continually forcefully massaged on the chest and back by the assisting women using their fists. After the child is born the mother is taken to an isolated hut, where she has to live in seclusion for about three weeks. On Geelvink Bay water is poured over the woman's head until she has given birth to her child. Among the Arfak, the woman has already been separated from all contact with the outside world for one to two weeks before the birth of the child, and must live in seclusion in a small hut. Only her husband has access to her (Waitz, 1864:635; Finsch, 1865:81). In order to keep away any unwarranted people, small pegs are buried in the ground around the house at a distance of 1 – 1¾ metres. The huts stand on very tall poles; these are two metres in length and only one metre wide and, especially during the daytime, a terribly hot place to stay, least of all for women who have recently given birth. In Doreh too, the mother undergoes her confinement in such small huts, [390] and can leave with her baby only a considerable time after the birth. The hut is so narrow that an adult cannot stand upright in it. Here too, only the husband can visit her. The mother herself can eat only certain foods during her pregnancy. In many areas, after the birth the mother is placed for hours in front of a hot fire for as long as she can stand it. Among the Alfurians, wome at the time of their monthly period have to withdraw into small huts only one square metre in area, and affording hardly any protection against sun and rain (Kühn, 1888:139). During this time the women must have no contact with the outside world.

On the occasion of the birth of a child, a feast is often given; this is sometimes repeated when the umbilical cord drops off. Generally the births proceed very easily. Nevertheless, after the birth of a child, women let several years pass before they bring a second child into the world, since they are already afflicted enough by the workload placed on them. More than two or three children are seldom kept alive by the women, the others are eliminated by abortion. This bad habit is very common, for example, in Doreh. Generally, the second day after the birth, the baby is taken to work in a pretty wicker basket, which the mother carries on her back. The children grow virtually without any upbringing. While the Papuans avoid having too many children, many superstitions probably also play a part here. Nevertheless, they do not want to lose those children who are alive; they protect and nurture them, especially the boys. The are given everything, even when quite young; later, the father and mother rarely punish them. This happens only when the parents are in a

rage. In such cases it often happens that the children challenge the authority of their parents, particularly their mother. If the child then strikes the mother, the Papuan father is not infrequently pleased with his brave son. So you cannot be surprised to find, only too often, precocious and early-maturing children among the Papuans. The natives of Geelvink Bay make much of two [391] spirits, Narwar and Ingier (Hasselt, 1890:103), who have their place among the people of the mist. As the people say, these spirits love little children, and kill them, not out of wickedness, but because they want to attract the little ones, who become their property through their death. Therefore, a careful Papuan mother does not leave her little one unattended in the hut at nightfall; also, the corpses of their little cherished loved ones are not buried in the ground but placed in the tallest tree branches for Narwar and Ingier, in the hope that they will spare the other children.

Up until about the sixth year the children generally run around naked. Then the girl is given a skirt or a cotton sarong, and the boy is given a *tapa* binding. The boy's ear lobe and nasal septum is also pierced. However, he is still a child, and spends his time with a lot of joyful games, while the girl is already at her mother's side. And so the boy's lot is much more cheerful and happier than that of his sisters. When the boys are older, they go hunting or fishing with their fathers, or play at hunting or warfare among themselves, or they enjoy themselves with whips or hoops.

With the onset of sexual maturity, admittedly not in every tribe, the boy's circumcision is the occasion for great festivities. When the girl becomes of marriageable age, she is kept inside the house as much as possible. Among the tribes on Humboldt Bay she is seldom allowed to go out of the house without an appropriate companion. Here too the daughters are not traded with strangers, as in the southwest of the Dutch Protectorate. Strict *tabu* laws mean that mutual affection between the sexes is difficult to achieve. Men and women eat separately. Certain relatives are not allowed to speak to one another, they must avoid each other when they see one another in the distance. Among the tribes on Geelvink Bay, future couples are engaged in early youth, often at eight years old. The girl then spends her bridal time in the house of her in-laws where she is carefully guarded against any approach [392] to her bridegroom and other men. She is not married before her sixteenth year; rarely does this this happen earlier. Polygamy is found almost everywhere, but hardly anyone has more than two wives, because the bride-price is too high. Also, the wife is purchased from her family. The price, or the gifts which are designated among the natives to hand over as of value in exchange for the wife, varies among the individual tribes, as also do the marriage ceremonies. The custom of bride-abduction still prevails among the mountain tribes; this is tempered by the voluntary flight of the bride with the bridegroom. The young man requests a suitable occasion to the girl, and they both agree on a day to flee. They are soon looked for by the family and, as the parents know their place of refuge, they are brought back to the village after a short time. Then follows the settlement of the bride price and the wedding ceremony. This consists of all parties being involved, including the parents on both sides, all scratch their foreheads to bleed, as a sign that now they all belong to one another. Then the young couple move into a newly-constructed hut and set up their own household together. Husband and wife do not sleep together; the former spends the night with the other men in the meeting house.

The inhabitants in the extreme southwest are unaware of any ceremony related to the uniting of a married couple. On Speelman Bay the marriage is concluded after payment of the marriage- or bride-price, consisting mainly of sarongs or iron. The woman is handed over to the husband, and a feast concludes the whole procedure. On Adi the suitor offers bridal gifts of iron cookware, gold chains, and slaves to the relatives of his chosen one. If these are not refused, the bridegroom solemnly takes his bride from her home. This gives rise to a feast lasting several days. During this they consume an intoxicating drink called *tuak* (identical with palm-wine) obtained

Main street in Dobbo, Aru Islands
After a photograph by Prof. O.Warburg

from the Nipa or coconut palm. Guns are fired and the *tifa* drums, covered in goatskin, are beaten. The feasting here has more of a Malay feel, as indeed the influence of the Malays is greater on the offshore islands of New Guinea than on the mainland itself. An actual ceremony does [393] not take place on Adi; likewise, polygamy is rare, for the reasons already mentioned. The husband has to bear the bride-price for several years still, after he has taken his wife home. As soon as husband and wife are living together their moral life is usually beyond reproach, as there are seldom adultery and blood feuds in Dutch New Guinea and the offshore islands.

The women on MacCluer Gulf are very expensive, and are very strictly guarded by the husbands as such an expensive commodity. In Sekar, Kühn not infrequently saw a husband beating his wife, to educate her according to his methods, and only once did he see the reverse, namely a husband receiving a good thrashing from his other half. In Sekar Bay and the surrounding area, the purchase price for a woman often amounts to two thousand guilders, certainly a very high price for a Papuan wife (Kühn, 1888:127 *et seq*.). This bride-price is called *herta*; it varies depending on the status of the father. It is usually made up of calico; daggers; chains; articles in gold-plate; earrings that are cast by the Papuans themselves, carved in an *ossa sepia* form; and finally slaves, valued from fifty to two hundred guilders according to their usefulness. These last are now seldom given in payment. Among the gold-plated products are the gold-plated chains already described. Each of these chains, *ulurmas*, is two metres long and is valued from one hundred to six hundred guilders by the Papuans, according to Kühn. The daggers (*kriess-mas*) are from Macassar and are kept in a gold-plated sheath.

In the east, among the Doreh on Geelvink Bay, the bride is also obliged to give gifts to the parents of the bridegroom; however, the bride-price is incomparably higher. Above all, it is clearly seen that for a marriage the bride-price exists here, and in the main it is implemented as a purchase-deal between the bridegroom and the relatives of the bride. The price consists of ironware, calico, probably also guns, and earlier, six to ten slaves. Once the business is completed the bride is accompanied in a solemn procession to the house of the bridegroom and handed-over to the parents of the bridegroom. The bridegroom himself goes later to the bride's house, where he is admitted only after knocking several times. The couple [394] then sit down before an ancestral figure and the marriage ceremony proceeds (Finsch, 1865:102) with the oldest person of those present placing the hands of the couple together, and presenting to them the rights and duties of the state of marriage. From a sago dish in a bowl placed before the couple, he gives some three times to the bridegroom to eat, then three timess to the bride to eat. Then the man receives tobacco from the woman, and she receives betel to chew, from him. But this is not the end of the matter. It starts at nightfall: while the others feast and enjoy themselves, it is a real torture for the couple themselves. They are placed by a fire and have to spend the night sitting up, awake, in front of it, still without belonging to each other. At every inclination to fall asleep they are jolted awake by one of the feast participants. Whoever copes well with this test of staying awake through their wedding night should live a long and happy life, in Papuan belief; and so every bride and groom are happy to undergo this torture.

Among other tribes on Geelvink Bay, the marriage ceremony consists of the future married couple eating a fried banana that they divided between themselves previously: a sign that they are, from now on, together. The married couple tend to wear a long, yellowed tree leaf in the rattan band on their left upper arm. On Humboldt Bay marriages are concluded only by inclination. The bride-price consists usually of two stone axes and a string of blue coral in the form of flattened discs. As Missionary Bink reports, the father of the bride receives these gifts and distributes the corals among the bride's relatives, so that the bride's mother receives half while the sisters, brothers, nephews, and nieces of the bride each receives one eighth of them. After these matters are settled, the bridegroom goes to his in-laws' house where the marriage is concluded under

observation of formalities. During the first few months, the young couple alternate in living in the houses of their in-laws or close relatives until a house is built for them.

Through marriage the wife normally enters her husband's family; should she become a widow, she must generally take the brother of her dead husband. On Speelman [395] Bay (Finsch, 1865:86 *et seq*.) for an extended period after the death of her husband she wears a long veil of tree fibres that almost completely covers her face and head. There, only after about a year is the widow allowed to remarry. On Kainani Bay she is not allowed to cleanse herself during the year of mourning; she also has to avoid any contact with the outside world until her husband is buried. As mourning clothes she wears a special cap, and a rattan armband on her left upper arm, until her remarriage. Up until that point she has returned to her parents' house. In Doreh the widow and her children in a special, small hut next to the house of her dead husband. On Geelvink Bay (Hasselt, 1890:117) the women usually tattoo themselves in memory of their deceased husband while, conversely, the men, in memory of their deceased relatives brand their images on parts of their body. Missionary Hasselt recounts in his description of the mourning ceremonies among the people of Doreh how on one occasion he saw the figure of a boy branded into the back of a brown body. In response to his question, the adoring father said in his language, "This represents my deceased son, whom I now always carry with me."

Although married couples in general live well-disposed and tolerantly together, on the other hand they also separate very easily in the event of some dissatisfaction on the part of one of the spouses. On Adi all the children stay with the father; on Kainani Bay the girls go with the mother, the boys with the father. In the east both adultery and separation are rare. There is the greatest chastity here, both before and after marriage, and should a breach occur it is punished or avenged by death. Among the natives of Geelvink Bay especially, the seducer of a virgin is expected to marry her, and is persecuted until he either meets this demand or leaves the area. In the west, sexual freedom usually prevails before marriage; everywhere, the local girls are carefully restrained only from the Europeans. [396]

e. Sickness, Death, Burial

As with all Papuans, so too with the natives of Dutch New Guinea, disease is the effect of sorcery or the work of hostile demons. The sick man is aided by sacrifices, which are brought to the spirits, or by the mediation of sorcerers, who drive out the demon that has taken up residence in the patient's body. Sick people who have suffered for a long time often seek death at the hands of their relatives, and the delirious or incurably ill are also killed against their will, for fear of the evil spirits that dwell within them. People also fear that the sick will transmit the evil spirits to the mats, containers, and food of the healthy through their body wastes or exhalation. In Sekar the fear of contagion is so great that if someone has died outside the house, the body is not allowed to be brought into the house. Likewise, in Doreh, the grave-diggers, before they go back inside the house after the burial, must first cleanse themselves and bathe so that all the unclean matter still adhering to them from the corpse is removed (Hasselt, 1890:118). And so the fear of spirits drives the natives into hygienic precautions, which are their best protection against contagion and epidemics. The most common diseases are those of the skin (*cascas*): the sufferer's skin is completely covered in scales and, from the spiral tracks that appear, the disease appears to be caused by a mite. Cuts, stabs, and other wounds are initially minimally treated or not at all, but these often fester and worsen in such a way that they not uncommonly lead to the death of the person involved.

Suffering among the Papuans is noticed only when the victim can no longer walk around or take food. They then try everything possible and, like a sacrificial lamb, the sufferer lets it all happen. Firstly they place green leaves on the festering wound or the diseased body part; give him

fish broth or an infusion of a broad-leafed, slimy plant; firmly constrict diseased limbs or scratch the scalp with bits of broken bottle to cause bleeding. If this all proves ineffective, then the sorcerer [397] has to help. Should his skills fail also, and the illness take on such a character that the patient feels that he is dying, then everybody comes to see him, causing the air quality in the sick room to deteriorate even further. The Papuan shows no respect, and even if he has sympathy with the patient, he chatters noisily in the sick room without even thinking about how much he might be tormenting the patient. Among the natives in the east, the uncomfortable position of the patient is aggravated by wailing women who, according to custom, surround the sick person and are particularly persuaded to raise their song while death is approaching the dying person.

If the sick person dies, these women start up the song of death, which is of manifold content and not without poetic charm (Hasselt, 1890:117). It portrays the faithful care of the deceased for his wife and children, his warlike and heroic deeds, and his other virtues. The wailing women also wash the body of the deceased, wrap it in calico and mats, tie it firmly with bast fibre, and then burial takes place. Other tribes on Geelvink Bay preserve their dead as mummies. On the death of a Mambri, usually the entire village gathers in the house of the deceased and, after the singing of the lamentation, the body is carried to the grave; the ancestral effigy of the deceased is brought and set up next to the grave and vehemently scolded for letting such a brave man as the deceased die. The effigy henceforth stands on the grave while weapons and utensils of all kinds are laid in the grave, which is constantly visited for a month by the mourners.

In Doreh the burial ceremony is quite unusual. While the corpse is being carried on a bamboo stretcher to the place of burial, everything in the village must be silent. The corpse is arranged in a semi-seated position in the grave, and many things necessary for daily life: weapons, and even a small canoe are placed in the grave with him (Waitz, 1872:687). It is their belief that the dead man will need these things where he is going. Before the mourners leave the grave, the [398] oldest of them positions himself on the grave with a leaf lifted from the ground. He holds this for some time over the head of the grave and pronounces the words "*Rur i rana*" (the spirit is coming). He is attempting to banish the spirit of the deceased so that it will not disturb anyone in the future. Finally, the relatives of the deceased put on a feast, after the grave has been fenced-in and an ancestral monument erected on it (cf. Ribbe, 1888:191 on burial ceremonies in the Aru Islands).

Should the firstborn die in a family without having reached youthful age, a special mourning ceremony is customary. The corpse is laid on a pole scaffold and a fire is maintained below by the mother until the head falls from the trunk. Then the trunk is buried; the head on the other hand is stored in the house. When the latter is finally completely dry, and ears, nose and eyes are no longer recognizable, the relatives and friends are invited to a celebration. The father raises a monotonous song while the others carve substitute ears and nose out of wood, then ceremonially substituting them in favour of the decayed ones. The perished eyes are replaced by red fruit kernels. Then follows a feast, at which the deceased, represented symbolically by his skull, is regarded as a participant also. He is served from the dishes presented, just like the rest of the people, and through this entire celebration the skull is consecrated as an ancestral image (Finsch, 1865:104).

Among the immediate relatives of the deceased, apart from the tattooing already mentioned, the cutting-off of the hair is considered a sign of mourning. Among individual tribes this can extend even to a man being totally shaven except for a lock over his forehead and one above the ears. Another sign of mourning among the Papuans of Doreh is a black armband worn around the upper arm, and a white collar. On the island of Run in Geelvink Bay the men wear a rough sack around their head as a sign of mourning and the women wear a rattan belt wrapped several times around their body (Finsch, 1865:124).

Grave of a chief in Sekar on McCluer Gulf

After a photograph by Prof. O. Waburg

The Arfak and other mountain tribes inland from Geelvink Bay did not bury their dead in the ground but [399] left the corpse to dry out on a specially-constructed high platform above a constantly-burning fire. Nowadays these tribes almost universally bury their dead in the ground, although almost always near their houses. They place the deceased's weapons on the grave, and daily replace the food there during the first two months after death. "The dead man eats the food" they declare; yet if they are told that it is not the dead, but rather the vermin that destroy the items, they reassure themselves with the response: "Whether they eat the food or not, we love our dead and therefore we prepare the food" (Hasselt, 1890:117 *et seq.*).

Bodies are rarely hung up in the house. A disgusting habit was customary in the past: namely, the corpse fluid was collected in a vessel below the gradually-decaying body (this custom was observed in 1896 by Captain C. Webster in the Kei Islands), and this dreadful potion was handed to the widow, with the threat that should she refuse to accept the disgusting drink, she would have to die. On Geelvink Bay, the corpses of slaves are either sunk in the sea or buried only superficially in the ground, so that dogs and pigs would easily find and strip the cadavers.

On the other hand, the method of burial is more civilised on and in the vicinity of Humboldt Bay. There they bury the bones of the deceased either in a rocky crypt or in the ground, and above the grave they erect a small, octagonal hut with a thick *atap* roof. According to the missionary Bink, the Tobadi villagers take their dead to a small island in the inner harbour, where they bury them; the people of Engeros take them to a nearby forest; and those of Engerau to the narrow tongue of land behind their village. In the west of the Protectorate, from Princess Marianne Strait to Speelman Bay, there are burial caves in common, to where the bones of the dead are ceremonially brought, a long time after they have been laid in the ground. On Aiduma they finally hide the bones of the dead in caves in the rock, after having initially laid them on bamboo scaffolds next to their dwellings immediately after death (Finsch, 1865:76). [400]

In Speelman Bay we not uncommonly find small huts erected over the graves, just as in Geelvink Bay. A bird carved in wood, the image of the soul of the deceased, perches on the roof. Wooden figures, in a kneeling position, can be found on the graves in Lobo. After some time, the corpses are exhumed and stored in baskets. In Sekar the corpse was earlier laid on a bier in the forest, or in a grotto. They were abandoned there, totally uncovered, to decay. At the instigation of the Arabs now living in Sekar, today the dead are generally buried in graves, with littles houses erected over them. Near Sekar is the little island of Ugar, where niches containing skulls or, more accurately, skull sites, are found along the beach at a height of three to four metres (Kühn, 1888:146). Ornamentally-carved boards have also been found among the skulls, probably the remains of the stretchers on which the corpses had been transported. Earlier, entire generations must have been interred there.

3. Religious and social relationships

The religious concepts and customs among the Dutch charges in New Guinea are still as indeterminate and confused as those of their brethren in Kaiser-Wilhelmsland and British New Guinea, and much more detailed knowledge than we have today, will be necessary in order to achieve a clearer understanding of their culture and beliefs.

Great veneration is given by the Papuans in the northwest of New Guinea to ancestral effigies. The name for these ancestral effigies, which are usually carved after the style of the large figures covering the posts of the *rumsram* (meeting house), is *korvar*. This word primarily means skull of the ancestors. The origin of the word is unknown. It has been derived from the Sanskrit *rara* (as Beccari maintains) or from *arnvala* (designation for village spirits on Timor Laut). Veneration of the ancestors and their depiction by wooden figures [401] is found particularly on

Geelvink Bay. It is probable that it arrived there from the west, from the East Indian archipelago where it was customary from ancient times. But whereas there, for example on Sumatra, the *korvar* are found only as images of the deceased, the ancestral cult is quite varied in the northwest of New Guinea. There is the worship of mummified, dried corpses; the preservation and veneration of ancestral skulls (Doreh); worship of representations of human figures, carved animal figures, of wooden racks bearing a skull, and finally of amulets that represent a human figure (Uhle, 1886). In Doreh, each family has its own *korvar*, which forms the medium by which the departed spirit remains connected with the surviving relatives. However, there are also ancestral effigies that are set aside on the graves of the departed as their property, and the ancestral images found on the graves in Doreh may belong in this category.

Here, too, the memory of the dead is honoured in every way, because the spirits of the dead have a great influence on the lives of those left behind. The Ajamborese believe in a peculiar migration of the souls. According to them, after death the mother's soul passes into the eldest daughter and the father's soul into the eldest son. According to Doreh belief, while the man is alive the seat of the soul is in his blood; in other tribes its seat is the eye; and in others again in the belly; and, as all good and evil emanates from the soul during life, so it continues after death as a spirit, usually bringing evil. It is said that the soul, preferably at night, seeks out the neighbourhood of its old dwelling and of its grave, which is why graves are avoided at night, and why at nightfall people only go out armed with a fire-stick. The spirits of the *mambri* (heroes) especially, evoked great fear among them. As Hasselt relates, in every village after sunset following the burial of a *mambri*, terrible shouting and noise are heard in almost every house. Through this, people want to [402] drive out the spirit of the dead hero after they have given him his due, and to protect the survivors from contagion and misfortune, which the spirit might visit upon them.

According to the Papuans' belief, spirits bring diseases, bad harvests, and war, as well as every misfortune. And not least out of fear, and to appease them from the outset, they look after the spirits of the deceased after death. Likewise, they offer sacrifices to them before any major event, and never fail to seek their advice beforehand; in Geelvink Bay often through the mediation of the sorcerer. Before such an interrogation they usually decorate the figure of the *korvar* with bright calico, and offer it tobacco and betel to get its agreement. They approach the figure in a respectful manner by pressing their hands to their forehead and bending towards the ground. Finally, they bring out their concern; if the figure then moves, due to any kind of external influence, this is regarded as worrying in every case (Hasselt, 1890:100) and the project is postponed or does not happen. If the figure remains immoveable, thereby giving its approval, this is regarded as a favourable sign and execution of the plan goes ahead. For example, they ask the *korvar* whether a sick family member is going to recover; whether to go trepang fishing or not; whether the coming trading voyage will be good or bad, and so on. They swear to the inadequacy of this oracle should, on the other hand, it cross their plans or show itself unwilling, which demonstrates, again, that people are on a familiar footing wih their *korvar*. According to Kühn (Hasselt, 1890:145), the inhabitants of Sekar have such faith in these *korvar* and, on the other hand such timidity before them that they trustingly leave gold objects and treasures of all kinds in their vicinity, even their entire possessions, because they are convinced that nobody would dare to steal anything under the eyes of the *korvar*. The natives believe that the ancestral effigy has the power to punish and to kill any person who interferes with these items. It is very difficult to separate them from these, their protectors. Once when Kühn succeeded in persuading a Sekar man to sell him his ancestral figure, the righteous Papuan, urging the welfare of the figure, [403] had laid it against his heart and, with tears in his eyes, separated himself from his faithful protector. The figure was a roughly-carved effigy with legs raised and with a big feather on its head; the bridge of the nose, nostrils, and eyes were blackened, and the rest of the face coated with lime.

The same significance as the *korvar* to the Doreh, is probably held by the *karra-karrau* in Humboldt Bay, a wooden figure carved from the root of a tree and representing a man or a woman in a crouching position. The figures are usually placed on the peaks of the roof, and the population has a high opinion of the reliability of the *karra-karrau*. On the one hand, while nobody refuses to give them their share of the trading or fishing, on the other hand they always take their advice before any hunting, fighting, or fishing expedition, or any other big event. It is probably through women's cunning that a dangerous influence on young girls is attributed to an ancestral figure on Sekar. There, an ancestral figure of Aerfana is said to be venerated. Beautiful girls must keep away from it, unless they want to give birth to a young Papuan child nine months later. Kühn (1888:145) who has seen this figure, is probably not wrong in saying that every man in Sekar would have been glad if he had just taken this figure with him.

Another item of the belief of Papuans in Dutch New Guinea is the amulets in which the place great importance throughout their lives. These usually consist of a simple or a carved piece of wood, or a bird bone. They are carried on a small cord around their neck; often delicately-woven pouches contain amulets of different content. In Sekar they are called *kaijuras*. Here the piece of wood is a span long, partly of wood and partly from the tooth of the dugong. In the pouches there are tree roots, tree bark, tufts of human or marsupial hair, nails, shells, boar's teeth and the like. These are said to bring success to the bearer at all times and places in war and plundering expeditions and other undertakings. In Geekvink Bay the upper end of the little piece of wood is a roughly-carved face. Every Papuan guards his amulet carefully, wrapping it [404] in lobes of calico (Kühn, 1888:144) often several times around their necks for protection: once for protection from animals, the second for protection from humans, and the third protection from storms and bad weather, and possibly one more for protection against danger at sea.

The most common are the amulets, which represent human figures in a squatting posture. Sometimes the figure of a fish or reptile appears in front of the human figure, and it looks as though the man is hiding behind the beast. The close connection between man and beast appears also in the ornamentation of the *rumsran*, and goes back to those of the Karewaris on whose posts are carved brightly-painted wooden figures of birds, fish and lizards, which, the natives say, is in memory of the dead who derive from these animals. The images on the amulets, representing snakes, fish, or lizards, have the same significance. The deceased's body form during his lifetime is inserted into the amulet in his memory. The people of Doreh, as well as the inhabitants of Speelman Bay and Princess Marianne Strait in the west, even brand their own bodies with animal images: on their forehead, chest and arms, "they dedicate themselves to the spirit of their ancestors, inscribing the original body of their ancestors onto their own bodies." On the island of Aru, crocodiles are not eaten because they are regarded as the ancestors of the local natives. There, crocodile figures are carved into the main posts of the *rumsran*. According to Beccari, many people in Masur abstain from the flesh of the cassowary, because in their belief the souls of their ancestors have passed into that animal. In the pictorial depiction of animals on the amulets, a person wanted merely to honour the lizard, the snake, the fish, or the crocodile as ancestral, and it can probably be assumed that this Papuan cult came from the East Indian archipelago. On Sumatra, Java and, especially, Macassar, the population firmly believe in a kinship with the crocodile, and it is well known that the Javanese indeed show no fear of crocodiles when they swim, because they trust them as their ancestors and not predators. [405]

In addition to ancestor worship and belief in spirits, as in Kaiser-Wilhelmsland and British New Guinea, there are undeniable traces of nature-worship in the Dutch territory also. There is great veneration of the moon everywhere: the inhabitants of Geelvink Bay believe that the moon is inhabited by a woman who is concerned with the weaving of garments, and often call upon her for protection (Hasselt, 1890:102) when their people are on a trading journey. The arrival of the new moon always causes joyous excitement, and during long, moonlit nights the dancing and singing

does not stop. The Vuka or Alfurians sacrifice to the sun by holding up food. Finally, while reciting incantations, they throw the food away without enjoying anything.They try to interpret natural phenomena by the influence of spirits. Thus according to the beliefs of the Doreh people, lightning is brought forth by the evil spirits who dwell in the air, and, in their belief, the thunderstorm is the outcome of a conflict among the spirits of the air. Thunder is unpleasant to them; they cover their ears so as not to hear it. Volcanoes, mountains, and the sea are regarded as seats of invisible spirits. As an assurance of truthfulness, the inhabitants of Geelvink Bay call upon the sky as a witness; the Alfurians summon the sun; while the residents along the Utanata River open a small wound on their body, mix the blood with salt water and drink it, to affirm the truth.

While the spirits with which the beliefs of the Papuans are closely connected are nearly all evil and do bad things to all mankind, we find in Doreh, miraculously, a religious idea reminiscent of the old Persian dual-god system: Manuval, the evil spirit, roams everywhere at night, troubling men. Narvoje, on the other hand, is the good spirit, who lives in the mist and often takes to himself people whom he loves (Finsch, 1865:107). The Papuans are far from fetish worshippers. They think of the spirits as foggy beings, and trees and other seats of the spirits are worthy of reverence because spirits have settled on them or in them. Probably most tribes also have [406] the idea of a higher being that has created the world, but they combine nebulous and unclear ideas and cannot be characterized either by pronounced monotheism or by polytheism. The Kainani people on Speelman Bay name Auwre (Hasselt, 1890:99) as creator of the world; the inhabitants of Geelvink Bay name Konori; the Doreh people, Manseran-Nangi, but without offering these beings any kind of worship or calling upon their aid. The Doreh also believe in an evil power of the *Manoin*, spirits that cause disease and death, and of the *Faknik*. The *Manoin* usually reside on the mainland. Through enticing singing they lure passers-by to land, then rob them of their heads. With the aid of sorcery they restore the heads to the victims and induce them to perform dances before them. Finally, the unfortunate men are released to their homes, where they will not rejoice in their freedom, but fade away in a slow state of despair. According to Hasselt, this belief in *Manoin* often gives rise to feuds between neighbouring tribes, because in the life of the Papuans nothing happens naturally — every illness and every death has to have a supernatural cause, therefore they all too often ascribe death or illness to the *Manoin* of an enemy tribe. Revenge is the result, and a feud alternates between them. The *Faknik* (Hasselt, 1890:101) are spirits that bring rain and storms when they leave their dwellings. In order to counteract the evil activity of the *Faknik*, the natives beat the air during bad weather, imagining themselves to be thereby driving the spirits back into their cave.

Among folk who have such childlike notions, it is not amazing that superstition influences all their activities. Random phenomena, bird flight, the falling of a leaf, rustling caused by wind in the trees, are interpreted as voices of the spirits, to their advantage or to adversity. Finsch records that the people of Doreh sometimes make a superstitious interpretation of what lies ahead from the cut they make in a banana. In Geelvink Bay it is forbidden to climb a tree from which you can overlook a rice field, for then [407] the rice will turn out badly. If a plantation is heavily invaded by wild pigs, they usually say that a pregnant women, unbidden, had observed the laying out, and thereby directly caused the damage. If the sago does not turn out well, then an unauthorized person has watched the tree-felling. Likewise, a failed crop is attributed to the fact that somebody has burned lime nearby. The clouds of smoke from this process are said to cause drought. And superstition so dominates their relationship with the European, whom they either receive hospitably or slaughter with cunning; deceive or serve honestly; work for him, or not; depending on whether their beliefs, through their spirits or ancestral figures, call them to do it, or restrain them from doing it.

Any individuality is thus stifled. On the other hand, good qualities do exist in their disposition. By virtue of these they can perform well if properly educated and instructed. Think

only of the techniques that they develop in construction, in their artistic taste, and in their carvings. Finsch enthusiastically describes the great "temple-like" buildings that he saw in Humboldt Bay and in Geelvink Bay. Because of their unique architecture and their purpose, these buildings deserve a closer look. In Geelvink Bay they are called *rumsram*, and generally serve the same purpose as in the rest of New Guinea.

They are not constructed north-to-south like huts and dwelling houses, but from east to west, and are usually found in the centre of the pole village. The *rumsram* in Doreh rests on twenty-four poles extending about a metre above the surface of the water. Rough bamboo canes form the floor. A double roof rises from the side walls. The first is 2 metres and the second 1⅓ metres high. Both are built in the shape of a *prau* and covered with palm fronds. The length of the house is about thirty metres and the width three to five metres. The entrances are very low (Finsch, 1865:107). In front of the western entrance are two posts, about 1⅓ metres long, representing a male and female figure copulating, while the figure of a child touches the rear of the man with its foot. They call the male figure Korvenbobi, [408] the women Saribi, and the child Nanduwi (Finsch, corresponding according to Hasselt: Savari, Koibien, and Kingini. Such a figure is found in the *Königliche Museum für Völkerkunde* in Berlin). These figures are quite distinctive, with immense heads and very small legs. The man's legs are turned towards the women's head. The sexual organs are exaggerated. This immoral portrayal is perhaps intended to indicate that the little child is attempting to dissaude the father, who is all too quick to have further children: a thought that is in harmony with the aversion of Papuan mothers to have more than two or three children. Similar figures are carved on the posts on the eastern side of the *rumsram*, but without that of the child. Finsch could not find out anything about the story behind these fornicating figures; as he says, the natives impart it to their eldest sons only when they are dying. The piles of the house likewise display carvings of naked human figures, snakes, fish, and crocodiles; among them is a woman with eight colossal legs, holding her hand in front of her belly; she is called Simbowi, the biggest snake is Kaydosiwa, and the crocodile Ambranoki. In the interior of the building, again, carvings in the same style as that just described are displayed on long beams; those of the male figures are called Baunani, Korombobi, Kowinki, Mamboki, and Bauwé (Hasselt, 1890:99). Finally, male *korvar* are hung on the two roof support posts: Konori and Magundi, the patriarchs of the Papuans. Every Papuan feels safe near these figures, and under their protection, and if these themselves, or the house, are falling into decay, then house and effigies must be replaced by new ones, so that the ancestors do not become angry. Amidst singing and dancing, the people build them anew, and decorate them exquisitely.

In Humboldt Bay the meeting houses are built similarly. In the village of Tobadi it is a building 18–20 metres long; from the platform a slanting walkway leads slightly higher, to the house floor. All parts of the house are held together only with cords and lianas. Four main pillars serve as supports for the roof. Long staves protrude from the sides of the roof. These are adorned with carvings of animals. [409] Palm fronds and garlands link the figures together. The shape of the building is octagonal, with the corners rounded. Four openings lead into the building. Beside them are four wooden boxes filled with sand, to maintain the fire. The four sections of the building likewise display brightly-painted wood carvings. Finally, there are painted animal figures thrust into the roof. On the outermost point of the roof a human figure is attached and, above it, a bird. Finsch (1895:142) and Bink (1894:5) give a description of the interior of such a house, which is called *karewari* in Humboldt Bay. Through one of the four-metre-wide openings you reach the lower space, from which a ladder with rungs leads into the actual interior. This is quite dark. Weapons, pigs' skulls, and canoes without an outrigger hang along the walls; short, black, bamboo flutes are in the middle of the room. They are carefully wrapped in calico, and serve as woodwind instruments that are never traded. When played, they produce sharp and soft tones; they are assembled like a funnel, and the alternating tones are produced by blowing and sucking air through

them. Unauthorized persons must never hold these instruments in their hands, otherwise Karrakarrau, whose figure is perched high above on the roof, might become angry and destroy the building. Finally, the interior of the *karewari* houses the already-mentioned, characteristic head coverings, brightly-painted pumpkin shells that the men put on only at certain festivities. Fire boxes and sleeping benches indicate that the house serves simultaneously as a living space and sleeping area. Also, every village of the Arfak has a meeting house; it is higher than the other houses and usually 20–25 metres long. Carving on the posts depict male and female figures in the same obscene pose as described above.

According to an old tradition among the Papuan tribes on Geelvink Bay, these meeting houses were first built according to the intentions of the patriarchal fathers. A few tribes still have the names of their forefathers in mind. Thus the people of Doreh designate Konori as the one from whom they derive their descent. He, as they say, descended from heaven [410] and created their land. By means of sorcery (named *marisbon*) by a girl he begat a boy, and then returned into the heavens. The girl is later turned into a stone (why, is not said) and the son goes to his father in heaven (Waitz, 1872:663).. Another myth presents Konori as the son of the creator of the world. The latter, Mangundi (Hasselt, 1890:104) in ancient times lived alone on Biak, one of the Schouten Islands, according to the legend, and from there, already an old man, he moved to Mekokwondi or Auki, one of the Boknik Islands. Here he invented palm wine, and devoted his time to preparing this intoxicating drink. On various occasions he noted, to his annoyance, that the bamboo vessels that he used to catch the juice, disappeared overnight. He decided to lie in wait, in order to catch the thief. Whom did he catch? The morning star, Sampari, who, in exchange for his freedom gave him a wonder-nut that he needed only to throw onto the bosom of a girl, to make her a mother. He did this, and the girl who was his sacrificial victim gave birth to Konori. On a *prau* that he made with his magic stick, he travelled with his wife and child to Mefur. From four wooden sticks that he pushed into the ground on this island, four houses arose: the foundation of the four village of the Mefur tribe, Rumberpon, Anggradifu, Rumansra, and Rumberpur. Some time later, Konori went on his own to Mesra, an island north of Mefur, where he burned himself alive in order to be transformed by the fire into a beautiful youth. Having returned to Mefur, among other things he taught his people the art of making a fire, but he abandoned this after a short time, indignant that the people did not trust him, and were disobedient. He had revealed to them that without effort and labour they could have everything that they needed to live, for all eternity. After a while, when it seemed to the people that their food supply was running low, they set off for one of the neighbouring islands to procure food. As punishment for their mistrust and disobedience however, [411] Konori disappeared forever and condemned the people henceforth to work, something they had never done before. Where he went, nobody knows; yet all the Papuans on Geelvink Bay agree that Konori has not gone away forever, and that on his return work and death will come to an end.

There is yet a third version of the Konori saga (Finsch, 1865:127), which has much in common with our story of creation: when the great spirit Konori created the land, he set the first people on the island of Meiokowundi. In a garden he had entrusted them with the care of two fruit trees, at the same time forbidding them to eat the fruit. Soon, when Konori went away he sent the snake, Ikowaan, to the people , in his wisdom to test them. The snake soon succeeded in inducing the woman and the latter, the man, to transgress the prohibition. The woman then realized that she and her husband were naked, and made a skirt of banana leaves to clothe them. When Konori came back he found the man and the woman clothed; they then moved to Mefur to become the progenitors of a great family. They had a daughter who rejected every suitor, until finally one of them, in a rage threw a root at her chest; the girl became pregnant, and gave birth to a boy. Overcome by grief at her disgrace, she threw herself into the surf. A turtle caught her but did not devour her, because the snake, Ikowaan, came to her aid in time. From this she learned the great secret: that Konori himself was the father of her little boy, and with this she returned home to her

village. The boy developed wonderfully quickly; he revealed his divine descent to the tribe and exhorted the people to do good. When this did not happen, the punishment was that one day all Papuans became brown and their hair frizzy. His mother was turned to stone, and the boy went to his father, Konori. Since then the Mefur tribe has been awaiting the reappearance of the child. Indeed Hasselt records that today, at Geelvink Bay, people appear from time to time declaring themselves to be Konori or Magundi. They claim to be in a position to rejuvenate old men by [412] fire, to awaken the dead, and to perform other miracles. People pour in from all sides, allow themselves to be deceived, and finally unmask the deceiver, until a new one takes his place. In the Konori myth we find echoes of our Old and New Testaments, while self-immolation is reminiscent of paganism. The basis of the myth may be of Papuan origin; the traces of paganism derive from contact of the natives with the trading people of the East Indian archipelago, so many of whose usages and customs have already been adopted.

The institution of the *Tabu* is as well known in the Dutch part of the island as it is in the rest of New Guinea. What is new here, is that men who are in mourning are forbidden to enter the meeting houses until their period of mourning is over. A short time before the declaration of manhood the Alfurians lock their boys into the *rumsram* for several months. During this time even their fathers have no right of entry there. An old woman brings them food and ensures that they remain secluded. The boys are *tabu*. Coconut palms and other objects are also made *tabu* there, so that it is recognisable as such by a clearly visible sign. For example, fruit trees in Sekar are hung with the *dar-un-sarsi*, i.e. fronds of young coconut palms. In the Papuan belief, anyone who does not respect the *dar-un-sarsi* becomes ill, or dies (Kühn, 1888:26).

The personage of the sorcerer has a more subordinate position. He is invited here and there by the Papuans during the interrogation of the *korwar*; for example, on Geelvink Bay he assists in seeking out whether the *manoins* of this or that tribe are to blame for the illness or death of a fellow tribesman or, through his art, he finds himself on the track of a lost or stolen object.

On Geelvink Bay it not uncommonly happens that women who are regarded as sorceresses are killed in a cruel manner. They prefer to suspect female slaves of practising sorcery. That said, their guilt or innocence is established by a sort of judgment of God; for example, they are forced to hold their arm in very hot water, up to the elbow. [413] If no blisters develop as a result, they are innocent and set free; otherwise, they are rowed out to sea by slaves and drowned. According to Papuan belief, all kinds of vermin and evil spirits crawl out from under the corpse. On Mansinam, as Hasselt records, a female slave perished in this manner several years ago.

As we have already seen, we see again here: there are slaves in Dutch New Guinea apart from the tribes on Humboldt Bay. Yet they are well treated by their masters almost everywhere, and generally regarded as being part of the family. On the slave hunts organized each year, particularly in the southwest of the Dutch Protectorate, many natives fall victim to this fate. In arming themselves before the start of the hunt, they do not forget to put on the protective and lucky amulets, and by skilful manipulation they confuse those being menaced on their own turf to the point where they lose their way and are then easy to capture. If, by chance, the slave hunters have not caught anybody at all, exasperation and rage is so great among them, as Kühn recounts, that they murder the first best person they encounter, even though he may be a friend. And so it is not surprising that a large proportion of the natives in the Dutch Protectorate, especially in the west of the country still live on the point of *qui vive*. In the east as well as in the west, the individual tribes, out of fear of hostile attacks by their neighbours, do not come into contact with them nor with tribes further away. They seldom dare to go just over the borders of the neighbouring tribe without fear. Only the inhabitants of Humboldt Bay enjoy a more peaceful existence. Among them firearms have found no entry, and kidnapping and slavery do not exist among them. They are neither headhunters or cannibals. Yet a few miles inland, on Sentani Lake, some tribes are feuding among themselves and fighting reciprocally. Furthermore, the people of the Doreh and Arfak have

always been on a war-footing. Very often the people of Doreh, often only in pairs, undertake raids against the Arfak Mountains. One warrior carries shield and lanze, the other bow and arrows. They sneak up to the enemy village, shoot the men [414] from they hiding place, and take women and children prisoners, for whom they will later seek a high ransom. They cut the heads off the slain and take the skull as war trophies.

The inhabitants of the island of Adi are usually at war with those on the coast, the Kamrao tribe. The people on Geelvink Bay fear the Biak pirates who, with their fifty to sixty-man canoes, frequently attack them. The Vandammen in the north of Geelvink Bay seem to have sworn to exterminate the Mefur tribe. When the wind blows from the south they come in fleets of ten to fifteen vessels and approach the enemy island of Mefur carefully, in order to find the right moment to attack the poor inhabitants of the island. Finally, the inhabitants of the island of Yapen are constantly feuding with the coastal dwellers, who want to prevent them from going to the Damar Cave. In the west are the warlike tribe *κατ' εξοχην* the Tugeri, who have often caused difficulties with the British administration of New Guinea by their frequent attacks onto British territory. From time to time they have penetrated as far as the former British station of Mabudauan, and the border tribes of the Wassi and Maut have so often been ravaged and plundered by them that they have abandoned their permanent settlements and become nomads; also, the entire coastal stretch from Mabudauan to Thompson Bay has been abandoned by the British subjects for fear of the Tugeri. The punitive expedition against the Tugeri undertaken by the Governor of British New Guinea and their encirclement on the island of Boigu (Talbot Island), as well as strong representations to the Dutch administration, have finally put an end to the predatory activites of this tribe. (The Dutch administration had already despatched the Dutch naval vessel *Java* to the coast of Dutch New Guinea at the beginning of 1893, and brought peace. However, the Tugeri once again rose up against their neighbouring tribes. On that occasion an upring by the natives on the Aru islands against the Dutch administration, led by a religious fanatic, had been quelled.) Further north, in MacCluer Gulf, the villages of Roeambatti, Patipi, Salakiti, Sang, and Sekar have frequently been in conflict with the Alfurians in recent times, and especially with the Ati-Ati people. [415] Those former villages regard themselves as friends of the Sultan of Tidore, the Ati-Ati people as enemies.

The Alfurians have a bad reputation as head-hunters. On the slightest pretext they suddenly begin a war. Catlike, they try to sneak up on their enemy, and woe betide anyone whom they see. He is cut down by an arrow or a flintlock, his head is cut off and spiked onto a bamboo cane in the village. The hero who has done such a deed is celebrated as *mambri*, without any regard as to whether the unfortunate victim is a man, woman, or even a child. A feast is given in his honour, and goes on for several days. The celebrated hero then adorns his hair with flowers, and his hair comb with the feathers of the white cockatoo or with parrot feathers, indicating by the number of feathers how many enemy heads he has already taken. Men who have not distnguished themselves by bravery are not allowed to wear such adornments, particularly not numerous feathers.

Before the men go to war they tend sometimes to colour their faces black, and to decorate their head and hair with a bunch of cassowary feathers or those of the black parrot. To attain the dignity of a respected *mambri*, they try to get as many heads as possible. Through such an honour they are given leadership in war and, during peace, the privilege of dancing at celebrations. The Kainani natives and their neighbours on Speelman Bay are also head-hunters. The skulls of slain enemies are dried out in the fire and later deposited in cavities in the rock. To get an enemy's head they resort to the most reprehensible means. They do not shy away from surprising the enemy while he is asleep, and rendering him defenceless by throwing a handful of lime or ash in his face; then he is slaughtered in this helpless state. Vengeance for the victim is usually the rule of the tribe, and since the idea of retaliation is deeply ingrained in the Papuans, head-hunting and the desire to become a *mambri* leads to endless feuding among the tribes. If a village is expecting a hostile attack the inhabitants often flee into the bush, and render the enemy's pursuit difficult by

studding the way to their refuge with the spikes of [416] fire-hardened bamboo projecting up to 1½ inches out of the ground. Since wounds to the feet caused by these spikes do not heal easily, the injured person is usually incapacitated for a long time

A similar reason for raiding and fighting among the natives is provided by the custom in the village of Sekar that a youth, before he may eat *sirih*, that is, become an adult, must have "taken a head".

Not uncommonly, women also give rise to disputes, and the manner in which the injured party goes about seeking his rights is often characteristic. For example, a man on MacCluer Gulf had taken the wife of another in adultery. The aggrieved party did not approach the culprit directly, probably because the latter had gone into hiding, but cooled his revenge until the first opportunity came his way from the seducer's village, and took that person's head as atonement. The perpetrator had to provide compensation to the relatives of the deceased and at the same time to the husband of the woman seduced for the bride-price paid.

In tribal feuds, as a rule the battle plan is discussed only at a general meeting. All resources are brought into play, sacrifices are offered to the spirits, recruits are gathered from allied neighbouring villages, and they boast in a most ridiculous manner about how they will torment the enemy. A blazing, well-tended fire signals a declaration of war. Fortifications are prepared; Lesson (1839:311) writes of high-altitude villages that are fortified with pallisades. Mantraps are set up, and the enemy is confused by a layout of false paths. Outstandingly brave and courageous the Papuan is not; usually he fights from ambush. He defeats his opponent by cunning and trickery; and when an enemy village is overwhelmed, everything is destroyed. Open combat is rare. If it does occur, spears are thrown by both sides; then it comes down to a fight with clubs, all with the most terrible shrieking, until the wounding or killing of one or several of the one side ensures victory to the other. Prisoners are rarely taken in battle; in any case, they are well treated. [417]

Unfortunately it often happens that women are attacked by hostile neighbouring tribes while working in the gardens, children while fetching water, or by chance unarmed men cutting down trees. Kühn (1888:26-27) reports that soon after his arrival two Sekar people, an old man and a boy, had been overwhelmed and killed probably by the inhabitants of the village of Prau while fetching water. The child had literally been cut into two pieces. The inhabitants of Etna Bay are dangerous robbers: in 1885 fifty peaceful Goramese who had dared to go to the coast there to trade, fell victim to their lust for murder and plunder. Four years later, the inhabitants of the village of Lahabia plundered a Dutch ship wrecked on the coast of Etna Bay and murdered the crew. Finally, two years ago there, Captain Webster lost several of his coloured companions, who had ventured too far into the interior on the hunt for birds of paradise. Also, the Aru people are not to be trusted, especially not on Korbrur. There, one day at dawn in 1890, a Chinese merchant in his own *prau* was murdered by the local people and his vessel burnt, right in front of Webster's eyes.

Cannibalism cannot be denied in some regions. However, when Hartzer (1888:55) represents the inhabitants of Geelvink Bay as man-eaters, this is certainly no longer true today. They no longer rejoice in this vice nor do the inhabitants of Humboldt Bay. However the Karon people in the north are likely to devour the bodies of slain enemies and even those of their children if they overcome both. On MacCluer Gulf the natives of the village of Prau are authenticated cannibals; as Dophik, a native of Prau, assured Kühn, the traveller at that time, the flesh of whites for a long time had not been as tasty as that of his countrymen. On the southwest coast also, cannibalism among many tribes seems to be beyond doubt. It is said of the Tugeri that they wear dried portions of human cadavers, the remains of their meal, as a decorative object. As we have seen, [418] the Tugeri are just a tribe that feeds miserably on fish and coconuts. It may have been a lack of anything better, that led to a diet of humans. In other cases the motive may be revenge: you eat up the enemy who has annoyed you or made you ill. The penis, as the life-giving member, is allocated to the chief. Usually the forehead is eaten first; then follow the thighs and the rest. Waitz

connects the Papuans' cannibalism with their spiritual beliefs. As spirits devour the souls of men to purify them and to incorporate them, so living people eat their enemy to thereby gain possession of his good qualities. However, the bodies of relatives are destroyed to allow them to enter the splendid spiritual kingdom where they receive everything in abundance and never suffer hunger.

Among the Papuans in the northwest, green branches are often regarded as a sign of peace. When peace is concluded, both parties often come together and lay their weapons at each other's feet; or they face each other in full war costume and representatives of one party palnt a tuber while the other party watches quietly without disturbing them. The skirts of the Alfurians are said to hang loose when they are on the warpath; on the other hand, if it is pulled tight, this is a sign that they are not undertaking any hostile activity. When peace is concluded the Ansoes natives require three bird of paradise feathers as compensation for a wounded person, and six for a slain victim.

As a rule the Papuans in northern New Guinea, besides the bow and arrow, make use of the spear and club. Through use of the bow the Papuan is differentiated from the Polynesian, so that the Melanesian origin of the Papuan can be inferred from the appearance of the bow as the principal weapon in New Guinea. Shields of wickerwork and tree bark are found also in many places. The natives in the extreme southwest retrict themselves to bow, arrow, and lance. The arrowheads of the Papuans on Princess Marianne Strait are made of hardened palmwood or cassowary bones, and armed with barbs. A special weapon of the inhabitants of the Utanata River is a type of axe made of pebbles, that is fastened to a long stick by a cord. They also use a club made of casuarina or palmwood as a weapon. These are ¾ metre [419] long; the handle is round, and the wider end is rectangular, with rough decorations. A few firearms have already been introduced among the Lobo natives, (Namototte, Triton Bay). These have been traded, together with powder and lead shot, from the Seramese (Finsch, 1875, p.76). In MacCluer Gulf the natives are said to have arrows with poisoned tips. The security with which people manage their bows and arrows is amazing, and they practise at an early age. Even six-year-old boys can shoot fish and birds. The small bows are bamboo and the bowstring is twisted bamboo bast fibre; the arrows are made from the rib of sago palm fronds. The barbed arrowheads are provided with two opposing incisions so that they will break off during removal from the wound. It is understandable that wounds caused by such arrows cause a severe fever and, perhaps, this fact has led to the evil reputation of the arrowheads being poisoned.

In order to avoid the impact of the bowstring when they release the arrow, the mountain-dwellers wear a band on their left wrist made sometimes in one piece and sometimes from several rattan rings put together. In addition, the Seramese have introduced firearms of the worst kind throughout the villages on MacCluer Gulf. The demand for these is very high; besides, they have the usual Papuan weapons. In the east, among the natives on Geelvink Bay the Doreh people have the advantage of a means of protection against other natives: wooden shields about two metres long and ⅔ metre wide, decorated by incised carving. The bows they make out of very hard wood are over two metres long. The bowstring is of bast fibre. Their arrows are made of bamboo, with a tip of cassowary bone or fish bone. If the arrowhead is made of wood, it tapers in the form of a sharp barb, and is fire-hardened before use. These arrows too cause dangerous wounds that are very hard to heal. The lances of the Doreh people have a sharp, iron point attached to a long, wooden shaft adorned with cassowary feathers; or they consist of a sharply-pointed bamboo stave. Sometimes they also use a short, throwing spike as a weapon. In part they trade [420] these weapons with other tribes: from the Waropen, Wendessi or Wandamanen. Finally, they have a big machete, *kerrawang*, which they almost always carry with them, having obtained them from visiting traders. From the latter they have also received a smaller knife, called *klewang*. Unfortunately, the Malay traders have also introduced them to firearms. The inhabitants of Humboldt Bay still have no firearms. Their lances are made of ironwood, and most men carry a small dagger made from human bone, worn in a rattan band on the left arm; it is sharply polished

towards the point. The bows and arrows are the same as those in Geelvink Bay. Here, in Humboldt Bay you still find the stone club. North of Humboldt Bay, between the latter and Sadipi Bay, the natives use a stone club also. During their campaigns, the natives occasionally set up war camps. On a reconnaissance tour in 1888, Mr Strode, an administrative official of British New Guinea, came upon a field camp of the warlike Tugeri. He found a number of shelter huts, each large enough to hold three hundred men, made out of branches and shrubbery, all the same size and same appearance, but totally abandoned.

Apart from slaves, there is no distinction in rank among the people in the Dutch Protectorate, nor is there any trace of a constitution, at least not in the west. Individual tribes may have a chief, yet, as in the rest of New Guinea, his power is usually insignificant, and his influence minor. Only rarely are there personal characteristics, such as spiritual distinction, bravery, reliability, or wisdom, with which the Papuan would acknowledge the dignity of a chief. In most cases a person who is well-disposed and generous has a certain influence over those immediately surrounding him, but sometimes extending over all the villagers. Gradually he is looked up to in such a way that they all call him chief, and his sphere of influence may even extend beyond the tribe; so for example Manawari, the chief of Sapapi, who speaks Malay and, because of his bravery and cunning, is also feared by other tribes. In general, it is only the title that distinguishes the chiefs from other members of the village; only rarely do they display themselves before the rest, with better jewellery. However, usually [421] others, particularly older people, hold greater authority than they do. Then it can come as no surprise that individual chiefs, such as for example Abrau on the Utanata River, build their own huts and paddle their own canoe. All public affairs are matters for everyone; they are discussed by all the villagers together in the meeting-house, where the voice of the chief is worth no more than that of anybody else. Each village is usually made up of various subdivisions: large, extended families; and several village communities form the tribe. Thus the Tugeri are settled in the southwest; the Lobo tribe on Triton Bay; the Kainani on Speelman Bay; within MacCluer Gulf the Alfurians and the Onin tribes; and in the north, the Karon. In the east the Mefur tribe, the Wendessi, Waroki, and the Kudiri are on Geelvink Bay; the Odambessoe at the mouth of the Ambernoh; the Bongos on Walckenaer Bay; and, finally, the Yotafur on Humboldt Bay.

Only in major situations will this or that tribe unite in a common cause. Moreover, every village community or every villager has freedom to trade. In Humboldt Bay, where the inhabitants show the greatest ‘civilization’ we see the first sign of a constitution. There, the high-chief of the villages of Tobadi, Engerau, Ingeros, and Naberi is the chief of Tobadi; his title as such is *Karessori*, and all orders, *prentas*, emanate from him to the *jente-karessori*, sub-chiefs, of whom there are four (Bink, 1894:2–3). The *karessori* has a house in Tobadi that looks like a Chinese pagoda, whose gable, like all the houses there, is decorated by a wooden figure. In the west the title of these high-chiefs invested by the Sultan of Tidore is *Korano*. As a sign of their investiture, which always takes place at Tidore, the *korano*s or *karessori*s receive a cotton shirt (*kabai*), and a calico cloth (*sarong*). The chiefs are required to deliver to Tidore an annual tribute, which the villagers must make up. Otherwise, these chiefs have little prestige, and no privileges ahead of the other villagers. Greater in general than the influence of the native chiefs, is the authority of the Mohammedan Rajahs invested by the Sultan of Tidore. On Misool in the northwest we have two: the Rajah of Waiguma [422] and the Rajah of Lilinta; in the southwest the Rajah of Namotote; and in MacCluer Bay, Abdul Delili of Ruanbatti and Pandi of Sekar. On Aiduma, Webster encountered a female Rajah, who exercised a relatively strict regime over her black subjects. When a New Guinea Rajah dies, he is succeeded by his youngest brother, then follows the son of his older brother, and, finally, his own son.

Among the Papuans in Dutch New Guinea too, property is recognized only in ownership. Despite the solidarity, that is, of communal ownership of land, here again, individuality is driven to

extremes. Moveable items are individual property, however this is restricted to canoes, household appliances, weapons, and jewellery.

Property is inherited through the mother (Waitz, 1872:661), where sons have preference. Should the testator be survived solely by daughters, the sons of her brother will be first to inherit. Should the woman survive her husband, she retains the main share, but the surviving parents and the remaining male family members have to be considered also. If there is no closer blood-relative, then property is distributed through the female line to more distant relatives.

Retaliation for the insult to a member of the tribe is a tribal matter, as a rule. Major crimes are rare within the tribe. As we have often seen, adultery, theft, and other serious crimes are avenged by the aggrieved parties themselves in particular ways. Minor offences from time to time, are dealt with by the chief or the village elders with a forfeiture of assets. Yet seldom is the power of that sufficiently punitive. If the accused refuses to pay the fine, and if he asserts his innocence, this is here and there put to the test. In such a case in Geelvink Bay for example, two poles were rammed into the sea; the plaintiff and the accused had to sit on these. On a given signal they both leapt into the sea and dived under. If the accused stays under the water longer than his accuser, he has proven his innocence. In the Aru Islands, if a slave kills a free person, the slave is put to death; if the victim is a slave, then [423] retribution by means of a fine is possible, likewise when a suitor falls victim to the revenge of a free man. If the required forfeiture is not deposited, this leads to a feud between the families involved. In the case of feuds between different villages, those capable of bearing weapons assemble under a suitable leader.

Compensation for debt is often carried out in a peculiar manner. Kühn records that in such cases the Sekar people help themselves as follows: If, for example, someone owes a pig to another person, and if he is in default for repaying the debt, the creditor simply takes the pig of any village inhabitant and considers himself compensated. The injured party then in turn compels the original debtor to replace it. Thus we see that the Papuan creates his justice in his own way, and one cannot deny that there is a certain sense of legal consciousness in him. It is not in his nature to harm his neighbour intentionally, but on the other hand selfishness is so ingrained in him that he has no scruples about the manner in which he achieves his rights.

As a mark of courtesy or sign of greeting, they rub noses, sniff the face of the one being greeted, scratch the navel, but seldom shake hands. If the guest is preparing to leave, one does not say “farewell” but “you are going”, and accompanies him part of the way. Before going to bed you do not say “Good night” but “Lie down” to which they tend to reply “See you in the morning” (Waitz, 1872:622). In Humbold Bay a sign of appreciation is a stroke of the hand across the chest of the one being honoured (Bink, 1894:6). Another sign of friendship is spitting of betel, and on the Utanata River the sprinkling of water out of the mouth. Also, the surrendering of a dog is regarded as a sign of friendship. Thus natives of the garrison of ‘Basilisk’ have presented dogs at various times, to express their peaceful intentions.

Often the Papuans adopt an affectionate manner, with which they greet even Europeans whom they have known for a long time; this is shown also in their love for their children, and in their orderly family life. The tenderness [424] with which they treat their children, and the kindness with which they generally treat their wives, seem to speak for the fact that they are not quite without feelings. Their devout ancestral worship may be more in fear of the spirits of their predecessors than a mournful devotion.

The Papuan does not have many needs, he takes whatever Nature offers him, and lays his head wherever he is protected from the rain. For this purpose the Aru Islanders, and other natives, usually have with them a water-tight, quadrangular mat woven from pandanus leaves, sewn together at the sides and folded together in the middle. These mats can be used as a protective canopy in this manner. The natives on Aru call them *lia-lia*.

As we have seen, Papuans in general love decoration and jewellery, dancing and singing, and only too often seize an occasion for celebratory feasts. Their dances do not differ much from those already described in Kaiser Wilhelmsland and British New Guinea.

They also use wooden drums as musical instruments. The Doreh people in Geelvink Bay are skilled makers of these. There the drums consist of a hollowed-out piece of wood, one foot in diameter, open at the bottom, with a lizard skin stretched over the top. The handgrip is usually decorated with carving. The drums in the east of the Dutch Protectorate are made in a similar manner. In MacCluer Gulf they are often covered with snake or possum skin. The drums are beaten sometimes by hand and sometimes with drumsticks. In Triton Bay the drums are two feet five inches in diameter, tapering downwards before widening out at the bottom. These drums have carved decoration also, and are covered with lizard skin. Besides drums, in Humbold Bay we find the wind instruments mentioned earlier. The conch shells serve more for signalling than amusement. These are big conches, which they blow by means of a hole bored in them. Finsch tells of seeing a dance in Triton Bay presented by twelve natives, whose lead dancer had a headdress of woven matting on his head. The other dancers, arranged in two rows, [425] were also decorated with colourful leaves and painted faces. While the leader danced back and forth between the two rows, trying to draw attention to himself by violent jumps and loud shouting, the dance of the others consisted solely of tripping to and fro. When this stopped, the leader's solo dance began. In one of these he tried to highlight a fever by imitating a shivering attack. Following that, he introduced other characteristic dances, and the end of the performance was acknowledged by a loud cry from the other participants in the feast, and rewarded (Finsch, 1865:70).

The natives on the Aru Islands train their cockerels to fight with those of their neighbours, and they massage the roosters to make the birds more supple and agile when fighting. This procedure seems quite pleasurable for the roosters, since they stand quite still during the massage.

The Papuans on Triton Bay have a different form of amusement, beating each other fairly hard with remarkable five-feet-long and one-foot-thick staves during their feasts. The end of the stave is tapered, and decorated with half-rings. The blows delivered must be rather painful, yet those who are hit should never lose their good humour, but, on the contrary, they have to laugh heartily with the others over the merry fun. Harmless fun, harmless Children of Nature!

Sometimes they also carry out war games, in which two hostile parties oppose each other, throwing mud and small pieces of wood: with fearful howling and crying, first one, then the other party retreats at the double under the hail of these strange missiles (Finsch, 1865:71). Above all entertainment, the Papuan loves singing and dancing, and the few myths and sagas known to us point to the poetic impulses of these Dutch subjects. The more fantastic a story is, the more they like it; unfortunately, they love to embellish, through which the sagas lose their originality. Each person tells the story that he has heard, and as he has laid it down in his imagination; and so it comes about that the sagas attain so many different versions, as we have seen above. [426]

The Papuans have little idea of time, and most cannot give any information about how long they and their ancestors have lived in their home village. Very few know the names of their ancestors beyond their grandfather. When they count, their counting system mostly goes only up to five, and they seldom count beyond the number of their fingers and toes. The people of Humboldt Bay are an exception. The inhabitants on Lake Sentani count only up to five like the others. For the numbers from six to nine they place a prefix before the first five digits. Ten is called *molee*, and to express twenty they say "*molee*" and place their two feet side by side, or seize both hands of the first person that comes along and then say "*megeri*", that is, ten fingers and ten toes. The Sekar people count to ten: one is *sa*, two *nua*, three *teni*, four *fat*, five *numa*, six *nam*, seven *wudares*, eight *wuderua*, nine *masfuti*, ten *wusuo*. From ten onwards, ten and the single digits are combined. Twenty is *tomate sa*, that is, a man who wants to say, the ten fingers and the ten toes of a man.

Twenty-one is *tomatesa isiresa*, that is one man plus one finger; forty, *tamate-nua*; a hundred *ratesua* (Kühn, 1888:47) The last number, and the entire numerative system show a great similarity with the Malayan. We come across a kind of time-reckoning among the Lobo tribe. There, they calculate from the return of the western monsoon and the return of the full moon. They call the return of the full moon *uransa*, and assume five of them throughout the period of the western monsoon, while six are reckoned for the duration of the southeast tradewind. One half of the year thus forms the period of the western monsoon, the other the period of the southeast tradewind. From the months of the western monsoon, one is subtracted for the great ebb, *kenterang meti bessaar*, the time when the wind changes round. The year, *ngaraska*, begins with the onset of the western monsoon, a time-point that they recognize in other ways as well: for example, the budding of the ironwood trees and casuarinas (Finsch, 1865:76). Likewise, the natives on Humboldt Bay reckon after *uransa*, moon-months, as do the Lobo people, though not with days but with nights. [427]

4. Produce from the land

The gardens and plantations are rarely laid out near the villages. Most are far away, especially far from the coast, where they are never secure from the plundering raids of foreign pirates.

Farming is totally unknown among the Tugeri. They live on coconuts, molluscs, larger fish, and wild pigs. Just as rarely, further north, among the inhabitants on Princess Marianne Strait and on the Utanata River, is there a trace of planting. There too they live mainly on crabs, crustaceans, and fish. Since they have no fixed abode, they keep their primitive foods constantly with them. The women carry these in large bags on their backs, secured round their foreheads; the men in front on their chests, on a hibiscus band looped round their necks. Also the tribes along the Utanata River know how to prepare sago, the pith of the sago palm. They feed mainly on pigs and fish. Likewise, the natives on Speelman Bay and Triton Bay live almost entirely from hunting and fishing, although the women cultivate some crops, such as taro. However, the main food sources are sago, molluscs, larger birds, and wild pigs.

The Papuans of Lobo in the southwest are already agriculturalists: in the neighbourhood of their tiny settlements, consisting of a few huts, there is usually a small garden of potatoes, bananas, sugar cane, and yams. Preparation of root crops consists simply of baking them in hot ashes. Also, paprika (Spanish, pepper), corn, and betel are found in their gardens. On Lakahia, and in the Onin and Adie countryside, introduced sago and fish are the main foods. These or other animals are roasted over a fire or in the ashes without being gutted or washed beforehand. In MacCluer Gulf the residents of the great village of Prau are less selective in their food; indeed they are not afraid to eat snakes, even half-rotten, without any preparation or condiments. They do garden, and are skilled in the preparation of sago. The main food source of the Kei islanders is fish, and for a few cents you can get enough [428] to feed a family for days; there are no gardens there. Apart from fish, they eat rice and coconuts, which they obtain from the Aru people in exchange for wooden bowls and pottery. The Alfurians cultivate small areas of virgin forest and plant pumpkins, sugar cane, sweet potatoes and other items, and often provide the coastal inhabitants with the produce from their gardening. They also raise corn and tobacco alongside the produce already mentioned. Overall, the Papuans have four oil-producing and five starch-producing plants, as well as four types of spice, thirty-six types of fruit, eleven types of vegetable, and twelve edible root crops.

Taro is most commonly cultivated, especially by the mountain-dwellers, in terraced gardens. Firstly the ground is cleared, and trees are felled (often with stone axes), burned or dragged away; the undergrowth and scrub are then ploughed up with lance-shaped wooden sticks about the length of an ulna bone, or by using a special wooden instrument, and likewise destroyed by fire. Finally, once the ground has been prepared the holes for the taro tubers are churned with

hard, pointed sticks. The mountain-dwellers raise less sago; on the other hand, the coconut is indispensible as a food source. Prolific stands of coconut palms are found in the interior of Humboldt Bay, on the Prau plain, on the lower Witriwai, and on the small island of Yamma. Unfortunately, in the Dutch Protectorate there is a total lack of stimulus to maintain these stands and create new stands. In the vast marshlands of the Ambernoh River, rice, introduced from Malaya, would flourish, yet it is rarely cultivated by the natives. At times, although only very rarely, you come across experimental plantings of cucumbers, melons, and beans. The residents of Humboldt Bay are more advanced in plantation cultivation than the rest of their countrymen; they conduct agriculture with fenced fields where they carefully grow tubers, *pisang* [plantain] and sugarcane. The hedge around the garden is to protect the plants from the depredations of pigs. Cinnamon and tobacco growing is carried out there also with success. The plantations of the sheltered harbour of Doreh are located for the most part on the island of Mansvari, where rice, corn, bananas and tubers are grown. They also cultivate sago. The method of ground preparation is the same as in Kaiser-Wilhelmsland. At mealtime the sago is [429] usually prepared by the natives in the form of dumplings, which are boiled in water: a food very difficult for a European stomach to digest. Often they prepare a gruel from the sago; in eating it, they use two small pieces of wood with great dexterity. The fruit of the breadfruit tree is also very popular. The Papuans cut these into slices and roast them in the ashes. In the absence of salt, food is prepared in salt water. However, from the ash of some plants they are able to recover salt, as d'Albertis records.

As for the Papuans' animal food, by and large they are restricted to vegetables, so their choice is not great. Pigs, dogs, and tree kangaroos are, as we know, the only large mammals that the island produces. Miklukho-Maclay tried to introduce cattle to them but, as Finsch rightly points out, what would a crop-farming people do with them? You cannot transform into shepherd-people in one stroke. Two types of pig occur in New Guinea: *Sus papuensis* and *Sus niger*. Both are descendants of wild pigs. The dogs are a small, smooth-haired, dingo species; a cowardly, malicious breed of a reddish-brown or yellowish-brown shade, with a small, fox-like head, stubby tail, and upright ears. Its deafening howl is a very unpleasant addition to foreigners' arrival in a Papuan village. The dogs are unsuitable either for hunting or as guard dogs. However, they are always a welcome roast at a Papuan feast. Since they are vegetarian like most of their masters, their flesh may not taste so bad. Together with the pigs, they are the poor victims at the oft-repeated feasts of the Papuans. The people breed and raise nothing else. Here and there you may find a cat or a chicken; only the natives of Geelvink Bay have tried to raise crowned pigeons.

Sagowaer, or palm wine, is familiar as an intoxicating drink; tobacco and betel as narcotic stimulants. When the trunk of the *nipa* or coconut palm produces sap, a hole is drilled into the bark and a bamboo held below it catches the fluid from the hole. In the northern part of the Arfak Range there are excellent tobacco plantations. The natives smoke tobacco, using a banana or pandanus leaf as a wrapper. [430]

Betel-chewing is widespread among the Papuans throughout Dutch New Guinea. They chew the aromatic, bitter-tasting leaf of *Chavica betle*, belonging to the Piperaceae, or a fully-immature betel nut; in addition, pulverized, quicklime from a long calabash that the men always carry with them is carried to the mouth by the aid of a long spatula made of wood or bone. The rest of the accessories are carried in a small bag attached to their belts.

Everywhere on the coast of New Guinea, despite strict prohibition by the Dutch administration, spirits, especially rum, and opium are being introduced in ever-greater quantities by the Mohammedan population and, unfortunately, the indigenous population is gradually adapting to these dangerous delights.

Plantation establishment by Europeans still hardly exists in Dutch New Guinea. At the beginning of this century the Dutch themselves had founded a settlement very near Doreh; like Fort Dubu, there is hardly any trace of it today. More recently, an English consortium has leased a

large area for cultivation purposes from the Dutch administration, on the northeast coast between Doreh and Humboldt Bay, for ninety-nine years at a moderate rate. The agreement goes beyond this: after that date the land is transferred into the ownership of the consortium. Despite the fact that this settlement was founded with English energy and ample funding, it did not fulfill the expectations placed upon it.

5. Trade and transport

In the extreme southwest of the Dutch Protectorate there are not even the beginnings of trade; for along the entire coastline from the British border to the Utanata River, the Papuans do virtually nothing apart from hunting and fishing. The natives in the Princess Marianne Strait are still busy hunting, but the return is low. [431] Neither bird feathers nor mammal teeth were regarded as jewellery. Further north, the production of *massoi* bark is a worthwhile occupation. The bark comes from a tree belonging to the Laurinaceae, which has been imported to the Dutch [East] Indies as an excellent health-remedy from New Guinea. These trees are zealously sought after by the Papuans and felled. If they see the trees on a steep hillside, they clamber up with catlike speed and admirable dexterity and fell the trunk, which then falls often a thousand metres down into the depths with a great din, tearing everything along with it. Then the natives rush down and peel the bark from the trees. The bark is taken by the Alfurians, particularly, to Aiduma, and in turn by these islanders to Ceram, Amboina, Ternate, and Banda, and traded for tobacco and calico, and in turn with the natives further north for opium, iron and weapons. The Lobo people, besides fishing for trepang, dive for pearls, catch turtles, and conduct major trading with all these articles; they are shrewd traders, and hand over nothing without prior payment. They have become distrustful and cautious because of dalight robbery and insidious attacks by Ceramese and other Mohammedan traders. Likewise, the Kainani people in the vicinity of Speelman Bay do not give anything without being satisfied beforehand. At the time of the west monsoon they carry on considerable trading with the merchants of Ceram Laut. However they must first exchange the food and products from the inhabitants of the interior. They then pass these on to the trading *prauwen*. Dobbo (see Plate 28) and Gumugumu on the Aru Islands are big trading places. The Kei people bring the Ceramese sago there for sale or exchange, in their boats made with great skill; cotton, calico, and knives are imported from the Sunda Islands; nutmeg, cloves, and tobacco from Banda and Amboina; and finally, from Singapore, mainly earthenware and spirits. On the other hand, trepang, turtleshell, mother-of-pearl, pearls, bird of paradise skins, and, finally, the clay pottery that comes from the main pottery sites of Watula, Cumul and Kanphori (Ribbe, 1888:196). [432]

Nutmeg is collected in great quantities by the natives of Patipi, Salikiti, and Taug on the MacCluer Gulf and inland from it; dried in specially-built houses; and then brought down to the shore. Here business is negotiated with the Bugis, Arabs, and other traders who visit the gulf at a favourable time of the year with their little *prauwen* and junks. Nutmeg is the seed kernel of *Myristica aromatica* of the Myristiceae family with yellowish leaves and almost pear-sized berries. The seed kernel in these berries is enclosed by a reddish seed coat, which is marketed as mace, while the kernel is traded as nutmeg. In addition, a vibrant trade is conducted especially with Macassar and Ternate through sago and arrowroot, yellowwood, mother-of-pearl, and bird of paradise from 458 Bay and Patipi Bay. The natives of Capau Harbour, south of the MacCluer Gulf also trade with the Ceramese and Macassar, exchanging *massoi* bark and nutmeg for calico and iron. Birds of paradise form one of the most important trade items of the natives in northeast and northwest New Guinea. Together with *massoi* bark they serve as trade items particularly for the mountain people. In exchange for the two they receive calico, iron or weapons from the shore-dwellers, items that the coastal people have received in turn from trade with the Ceramese.

By and large, trading among the natives themselves is very insignificant. In the east, the natives of the lower Ambernoh, in the villages of Mapi, Kabuni, Merabui, and Worombirki, trade with the inhabitants of Geelvink Bay, exchanging pottery, carving and sago for other necessaries of life. By trading with the schooners of the firm of Koldenhoff in Ternate, the residents of Doreh obtain European goods to deliver to the natives on the north coast of Geelvink Bay in exchange for natural products. The Tobadi people trade with the villages in the east of Humboldt Bay, Sekar, Jaki, and Numbi, even with the *kampongs* in Walckenaer Bay. The inhabitants of Matterer Bay in turn have a trading relationship with the Yamma Islanders. In the west, too, some of the larger village communities conduct other trade, even when, as is often the case, this is associated with difficulties due to the rapacity and murderous lust of their business partners; [433] for example, trade relations between the Sekar and the Prau people. The Sekar people sometimes get their sago supplies from Prau, since they do not cultivate it themselves, and give in exchange bric-a-brac which they have received from the Ternate and Macassar people in exchange for nutmeg. However, they go to Prau only in great numbers, in many canoes, and always armed to the teeth, and stay with the canoes, a good distance from the village as a rule. They do not trust themselves in the village itself, for fear of an attack.

If natives of MacCluer Gulf are trading with Europeans, the latter must gradually become accustomed to the characteristically-slow manner of the natives when trading. It is seldom the case that the trading natives reveal openly and clearly their intention of bringing their goods to the man. They never take the initiative, but let the merchants come to them, and then wait until they are spoken to, and often, in response to the question, “Well, what do you have, or what have you brought?” you get the answer, “Nothing, sir”. Finally, they come out with speech, usually demanding ten times the price of what the offered object is worth, but as a rule they are satisfied with what they are given, in their own estimation. When trading with the Malays and Arabs, they are more cautious and shrewd because they are deceived too often by them. In addition to the items mentioned above, sago, arrowroot, quality species of wood such as sandalwood and ebony, and copra and, in the east, slaves, are commercial items.

For a Malayan *parang* worth from fifty pfennigs to one Mark, the natives at Witriwai give two hundred and fifty coconuts; they give less for it in Geelvink Bay and Humboldt Bay. In the west, opium and spirits are the most popular exchange items. Other items such as calico, small mirrors, needles and knives are only free bonuses. The Kei people and the Aru Islanders are also competent traders. In the harbour of Toeal on Great Kei there is lively traffic all year round. The Bugis from the Celebes, Chinese merchants from Singapore, and Malays from Macassar arrive from their trading houses in their trading praus with a favourable wind, bringing clothing material, spirits, knives, and hardware and, with an opposing wind, depart with cargoes of turtle shell, mother-of-pearl, and trepang. The [434] turnover had earlier been several thousand pounds sterling here. The import and export have to be supervised by Dutch officials, so-called postmasters; mainly they are expected to pay attention to the fact that no spirits are imported. However, their monitoring would be very superficial. In the stores at Toeal and Dobbo for a relatively cheap price you can get all sorts of useful objects and utensils.

The commercial centre of Dobbo is situated on the small island of Wamma, on a sandbank only 150 metres wide and extending in several rows of houses about 400 metres into the sea. The houses are simply built and covered by palm fronds (cf. Plate 28). Dobbo is one the places touched on by the postal steamer that plies the coast of Dutch New Guinea every three months. There have been two regular postal steamer connections between Dutch [East] Indies and Dutch New Guinea since 1877. One goes from Macassar in the Celebes via Amboina, Banda, Sekar, Sekro to the Kei and Aru Islands and from there to Sileraka, which is situated on the main island at about 141° E. The second goes from Ternate (Halmaheira) through the Dampier Strait, touches on Sorrong in the

north, Doreh on Geelvink Bay, the Run-, Ansoes- and Djamma Islands, with its terminus in Humboldt Bay on the Dutch-German border.

Another regular connection is made by the big trading-house of Bruijn and Duiveboden on Ternate with Dutch New Guinea. The firm has several branches here and on the neighbouring small islands: Doreh on Geelvink Bay, Ansoes on Yamma, and a third on Yapen Island, and twice a year it sends its schooners to these places to collect copra, which their agents have negotiated with the natives in the meantime, in return for exchange goods. Koldenhoff company in Ternate also has a branch in Doreh to trade dammar and *massoi* bark. On Ansoes the firm of Bruijn & Co. has built a mole out into the sea to ease the loading and unloading of trade goods. It can be concluded from this that the company's business is not doing badly. Besides the ships of these houses, Ambonese, Ceramese and other praus sail to these coastal sites, as well as smaller sailing ships from Ternate and Macassar. On the west coast, besides the Aru and Kei islanders the Papuans actively trade with the Lobo natives and the Sekro [435] and Sekar peoples; on the east coast: with Doreh, the natives of the Yapen and Yamma islands and with the inhabitants along the Wiriwai River.

What this trade covers, we have already seen above. However, since no reliance can be placed on the natives, and their assurances that the promised products will be ready in a certain time are not to be trusted, then consequently, if a ship often makes the long voyage in vain, the expenses of larger vessels are generally not covered. On the other hand, for smaller vessels trading is worthwhile. In recent times, several Chinese in their small sailing ships have come to Humboldt Bay and beyond to the German territory, and have devoted themselves particularly to the bird of paradise trade. In Sekro, when he touched upon it on his voyage to Sekar in 1888, Kühn found three small schooners and eighteen Malay *praus* at anchor in the roadstead: an indication that trade with the natives is making progress in this region as well. All told, the number of trading sites along the Dutch coast of New Guinea is barely twenty, and a year's trading amounts to no more than two thousand pounds sterling.

6. Land colonization

The image of the Papuans of the Dutch Protectorate that we have created in the previous section shows that the Dutch have to deal with a people who have preserved their originality despite the destructive influence of the Malayan traders and pirates. As we have seen, in the culture of the Papuans described, the inhabitants of Princess Marianne Strait are at the lowest level, and the natives of Geelvink Bay and Humboldt Bay are at the highest. Going down, there follows the Lobo natives and the natives on MacCluer Gulf, then the Papuans on Speelman Bay and those of Namotote, the Kainani people and, finally the Arfak and Alfurians. At roughly the same cultural level as the inhabitants of Princess Marianne Strait are the Tugeri, and the Papuans at the river mouths of the Utanata, Ambernoh, and Wiriwai. [436]

The attempts at conversion of the natives that the Mohammedans have made in the west of the Dutch Protectorate have not been without success, according to the latter's assertions. Perhaps the custom of the blacksmith-fraternity on Geelvink Bay, to withdraw the indulgence of eating pork from entrants to this fraternity, is already a consequence of the Mohammedan rite. In any case, it can probably not be denied that the Arabs have succeeded in winning many adherents to their doctrine, at least superficially, among the Papuans in the northwest and in some places in the southwest. On the other hand, missionaries of the Utrecht Mission stationed on MacCluer Bay, on the island of Run in Geelvink Bay, and on Doreh Bay, despite their obvious efforts, have so far had only a few successes in conversion among the indigenous population. At least in their moral and educational relationships they have exerted a favourable influence on the Papuans there. The

French Jesuit Mission too, which, as we have already seen is based at Toeal in the Kei Islands, has not yet been marked with noticeable success. It is true that a big, beautiful, wooden church serves the already-baptised natives for their edification, which, however, is more perceived than experienced.

In the southwest, the Aru Islanders and the Lobo people are under the influence of the Mohammedans. Every year, as Finsch reports, Mohammedan mullahs come here to proselytise. The natives have already adopted much of their rite, for example, the type of burial, abstention from the enjoyment of pork, deposition of the oath in the Mohammedan manner. But they neither pray nor fast according to the Koran, of whose existence they scarcely know anything. On the other hand, the consumption of opium, which the Mohammedans with their doctrine are introducing among the blacks, is demoralising to the natives. For example, in all the villages on the foreland of the island of Wamma, where the Mohammedans have come to attempt conversions, a large proportion of the Papuans have already succumbed to opium. Further north, on MacCluer Gulf, is a further stretch with an indigenous population of Mohammedans. At least the inhabitants of the villages of Ruambatti, Patipi, Salakiti, and Taur have declared to the English capatin Strachan that they were all Mohammedans. The Sekar people too, as Kühn mentions, are, for the most part, Mohammedans, but in [437] name only, since they are still involved in the making and in the interrogation of the ancestor images.

Only a small portion of the Dutch Protectorate has so far been opened up, and, where attempts have been made to pentrate the interior it has always been foreigners and not Dutchmen who have undertaken this task. The Dutch have confined themselves merely to cover the trade already existing at the time of the proclamation of their protectorate, by their flag, and to protect the natives from the perilous influences and dangers that threaten them owing to their dealings with the Malay and Arab traders as much as possible. On the 390,560 square kilometre territory of New Guinea, Holland has no permanent settlement; for Fort Dubus established in 1828 on Triton Bay at great expense, was soon given up again, as we know. The Dutch in New Guinea are merely the heirs of the Sultan of Tidore; as his feudal overlords they have, at the same time, assumed the seigniory over the northwest of New Guinea.

By contract with this prince at the beginning of this century, it has since then become confusing to him to demand his annual tribute. However, today he can still appoint Rajas on the mainland and on the surrounding islands with the approval of the Dutch administration, and he exerts considerable influence both there and here, merely through his name.

As another right the Sultan claims that on every reconnoitering journey from Ternate by the Resident, who has responsibility for New Guinea, or on every visit to New Guinea by a Dutch warship, a prince of Tidore should travel with them as a representative of the Sultan.

The Dutch in New Guinea have only so-called protected harbours, such as Doreh, Amberkaki, Dobbo, Toeal, which provide the necessary protection and anchorage for warships and trading vessels. Besides the mail steamer, Dutch warships touch here and there along the coast and, by raising the flag and presentation of the Dutch standard to prominent natives (chiefs), they recall the reputation of the Dutch administration; and if their authority is recognised in this manner in the east generally, and in the west at least [438] as far as Aiduma, it is only superficial. The slave trade still flourishes in the Dutch Protectorate. By threat of harsh imprisonment and the dispatch of their warships the Dutch have tried to stop this activity, and the administration has already spent enormous sums under the relevant Regulation to liberate natives who are under the yoke of slavery. However, neither severe punishment in exposed cases nor frequent showing of the flag and bringing in the guilty, have so far brought about a change for the better. As soon as warships and the mail steamer are once more out of sight, the activity begins anew. Indeed, on MacCluer Gulf individual villages have fixed boundaries to their slave hunting regions which, according to agreement, cannot be visited for this purpose by any other tribe. Among the inhabitants on Princess

Mosque in Sekar, on the MacCluer Gulf
(after a photograph by Prof. O. Warburg)

Marianne Strait, Speelman Bay, the island of Adi, and even the inhabitants of Geelvink Bay, there is still a flourishing slave trade conducted from the Moluccas. There the value of a slave is estimated to be between twenty-five and thirty Dutch guilders.

All the Rajahs on the west coast of New Guinea have no conscience about going on manhunts or, what is more convenient to them, of buying slaves from traders. It is said of the Lobo people that they trade even their wives, and the Papuans on Princess Marianne Strait are said to trade even their small children into slavery. Thus slave raids, especially in the west, and a state of piracy in the east are an obstacle to peaceful communication; and that the Dutch are so little organized against it, is chiefly due to the fact that the administration itself has no firm footing in the land and no officials are in place there (only on a few of the smaller or bigger islands, like Aru, Great Kei among others, are Dutch customs officials active, at the same time looking after postal services). Their influence extends only so far, like that of the Sultan of Tidore, and outside this sphere of influence only a half-broken coat of arms, made of wood or cast-iron, signals here and there that Holland 'rules' in this country.

Isn't the motto on the coat of arms, *Je maintiendrai*, the most stark contradiction to reality? And so far, the prospect of making this motto the truth is very [439] slight. As a rule, these coats of arms are dispersed along the coast, usually near *kampongs*, fastened to trees or posts by rattan or nails. Yet scarcely has the warship, whose crew has fastened the shield, turned its back than the shield lies on the ground; the nails that secured it have fallen victim to Papuan greed. The next warship finds the shield, markedly damaged by rain and weathering and barely recognisable: the proud motto a mockery. The flags distributed to the chiefs have not infrequently met a similar fate: on the next visit by the warship that distributed them, they are found often enough draped as a loincloth around the body of a Papuan beauty, especially among the natives in the southwest of the Dutch Protectorate,

The reasons for the Dutch administration not installing any officials in their own Protectorate and not setting up permanent stations arise primarily from pecuniary motives. Cultivation of the land would probably swallow up huge sums of money before it would provide full benefit to the coloniser. But above all, the Dutch still do not know their land; they do not know whether, besides the Ambernoh, Witriwai and Utanata, there are other significant watercourses that might make it easier for them to penetrate the interior and pave their way, nor whether hidden treasures that could be mined lie in the interior. With the colonising maturity that so greatly distinguishes the Dutch from other nations, it would be an easy thing in the not too distant future, given their energy and their tireless diligence, admittedly with pecuniary sacrifices, to make a second Java from a land that apparently contains all the advantages to one day become one. [440]

X. Contributions to the Ethnography of New Guinea

by Prof. Dr. F. von Luschan

The author and publisher of this book have requested an ethnographic contribution from me. I am fulfilling this certainly-justified and, for me personally, very honourable wish not without the deepest thought. As things lie right now, it would be easy to write six or eight big, scholarly books on the ethnology of New Guinea, but at present it is absolutely impossible to give an accurate and rounded picture of the ethnographic conditions of this island, as big as it is unknown, in three or four printed sheets. Almost all of the prerequisites for this are still lacking, and if in the future these do not come to us at a faster pace than they do at present, it will not be possible, until after several decades, to write an exhaustive ethnology of New Guinea.

Nevertheless, if I now attempt to comply with a request delivered to me in such a friendly manner, and provide an ethnographic contribution to this book, I am doing it mainly out of personal respect for Dr Krieger, to whom I am indebted for a great deal of instruction, and to whose future activity in the Melanesian sphere I attach the greatest hope. However, from the outset I must forego drafting a self-contained sketch; it would have to be so uncertain and fragmentary, and contain so many varying hypotheses that it could only be problematic, especially for a wider circle of readers. [442]

On the other hand, it seems to me an appropriate contribution to the present book to address some of the new questions relating to New Guinea that are not only interesting to me, but in general might be able to awaken, or more accurately pose, some ideas about the aims and ways of ethnology, even among laymen. In so doing, I shall essentially confine myself to ethnographical questions in the narrow sense of the word, since we are far less informed about the physical anthropology and the linguistic relationships on the island than about the purely ethnographical character image.

It is, however, necessary that we deal sufficently broadly with the anthropological situation that we arrive at least at framing a question, and show the direction in which future work should be most appropriately directed. The material available so far is very small: A.B. Meyer has published on 135 skulls; O. Schellong has measured 63 living individuals. Whatever around two dozen other authors have reported on measurements and descriptions of skulls and living individuals amounts to barely the work of one of the two former authors. The hopeless confusion which C.E. von Baer has instigated with his unfortunate classification of Papuans and Alfurians, and the totally useless descriptions of Papuans that Friedrich Müller has outlined, still weigh heavily on the research of the younger generation and are a reason for the embarrassingly slow progress of our knowledge.

On the whole at present, it seems as though the population of the island is somatically not uniform. That it contains all kinds of foreign elements is, in fact, self-evident given the geographical conditions. Polynesian colonies, shipwrecked Micronesians, immigrants from the Bismarck Archipelago and even from mainland Australia are accurately documented in part, and in part are at least to be accepted with some certainty. Yet all these foreign elements are numerically far removed from the real core of the native population. If this nucleus is said to be physically non-uniform, it must not be forgotten that the greater part of the island is still totally unknown; that our current knowledge is limited to a few coastal areas and a couple of rivers; and that the seemingly densely-populated valleys in the interior [443] have not yet entered the field of detailed anthropological investigation. It is therefore not at all impossible that big surprises still await us in anthropological respects in New Guinea and, by analogy with other large Pacific islands, it had to have been expected, from the outset, that the population of the interior is somatically different from that [444] of the coast. But, for the time being, we should be glad if we could at least answer

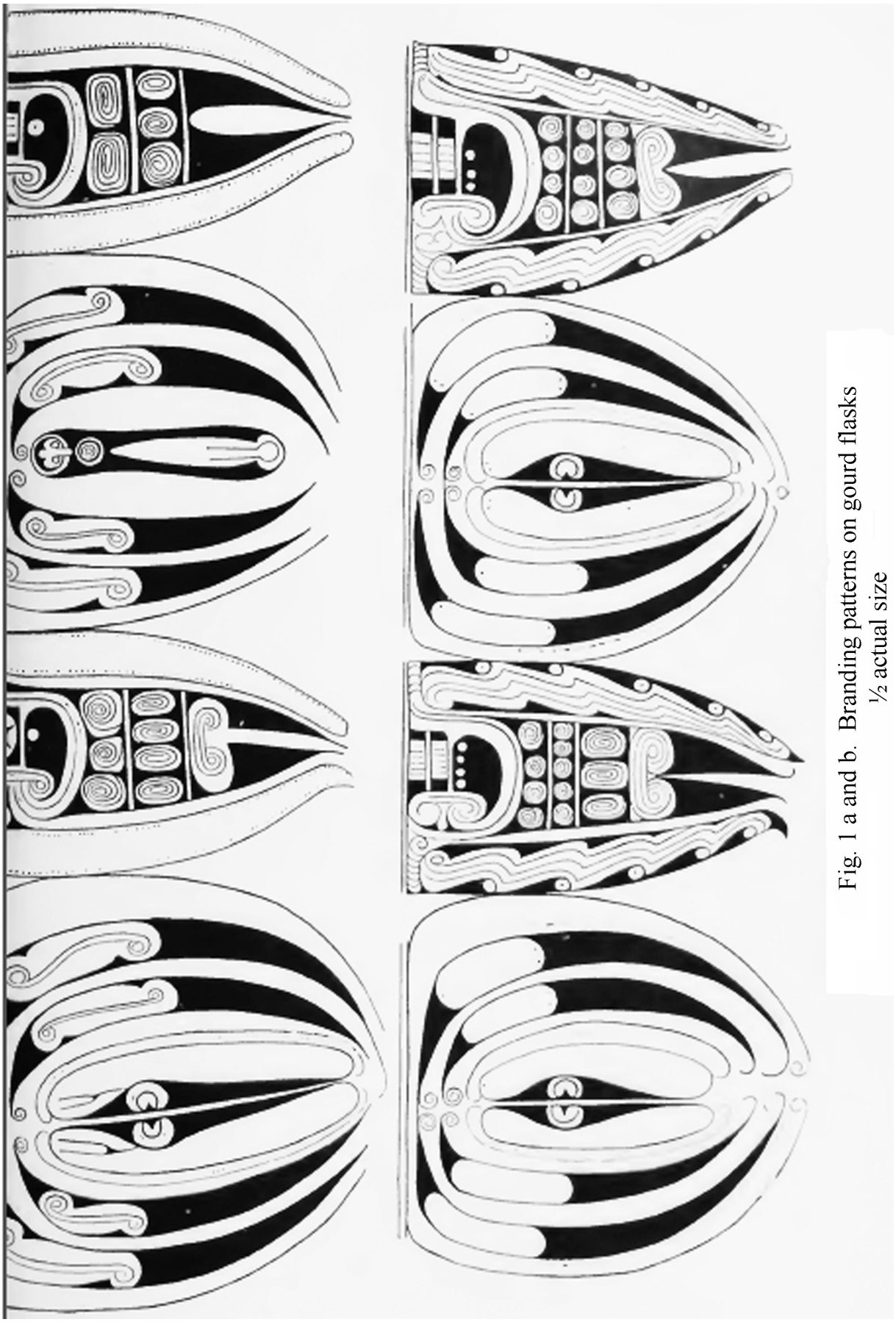


Fig. 1 a and b. Branding patterns on gourd flasks
½ actual size

the question concerning the homeland and the racial affiliation of the coastal population of New Guinea: the “Papuans”. Unfortunately, we are not in a position to do so at the moment — simply because we are not at all so thoroughly informed about the physical characteristics of the other Oceanians that we would obtain perfectly sound, self-supported, and universally acknowledged results. In general, however, Father Müller’s false doctrine about the close affinity of the Polynesians with the Melanesians may be regarded as overthrown, but his school is still functioning, and even such a distinguished and perceptive scholar as Gerland has not been able to avoid its influence, and has just recently re-espoused the genetic relationship among the Australians, the Polynesians, and the Melanesians.

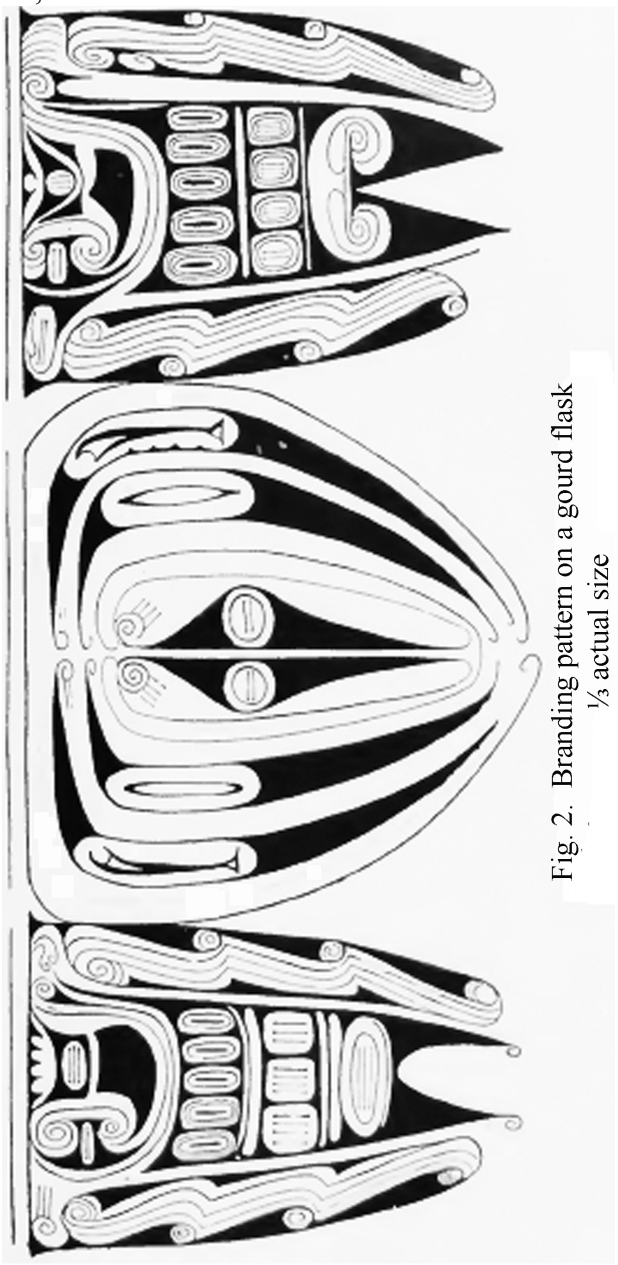


Fig. 2. Branding pattern on a gourd flask
⅓ actual size

On the contrary, it is necessary that we consider some of the better-known peoples of the South Seas from a purely scientific and anatomical point of view; for example a Tongan: smooth black hair, pale skin shade, and an extremely short, broad skull — this is the anatomical formula for a typical representative of the real Polynesian. If we stand a typical East-Melanesian alongside, such as a man from Viti Levu or the interior of New Caledonia, with frizzy hair, dark-brown skin and an

extremely long, narrow skull, we have to say that from a purely-anatomical point of view, no greater difference is possible anywhere within the human race. The difference between the typical Tongan and the typical East Melanesian is greater than the difference between a European and a Chinese; it is as great as that between Europeans and Negroes. In contrast to this anatomical fact, linguistic affinities must be judged very carefully. The old notion that language and race always coincide, is recognized as untenable; we now know that the physical characteristics are inherited with great energy through hundreds of generations and, on the other hand, we know of numerous cases in which one tribe within a few generations has imposed its language, its uses and its customs so completely on another tribe that no trace of the old ethnographic–linguistic character [445] remained, and that the actual facts can be developed only from the anatomical findings and from the historical tradition. Any kind of close genetic relationship between Polynesians and Melanesians must therefore be resolutely rejected, the more so since intermingling between these two races has been taking place for many centuries, and the resulting mixed forms have already contributed much to disguise the true facts.

Verifying the original elements of a mixed society, arising from long-continued intermarriage is not so completely impossible as it previously appeared, but at the same time it requires a very large quantity of cranial and body measurements, and particularly careful treatment of it. As long as the values from men and women are thrown together indiscriminantly, or are even based on the earlier very popular arithmetic mean, then you cannot expect reasonable results. It is only when the numbers obtained by measurement and the indices calculated from them are arranged and grouped in series, that reliable and worthwhile results are obtained. In 1895, my pupil, W. Volz, published a major work on the anthropology of the South Seas in *Archiv für Anthropologie* (vol. XXIII). The material that he used, measurements of 1,403 skulls from different areas of Oceania, is insufficient to allow conclusive results for each individual island and island group in the South Seas, yet the verified results of this study are nevertheless so important and of such great general interest that I would like to take the opportunity to refer to this work.

In the meantime I shall present a very schematic example of the dangers of the arithmetic mean and illustrate the usefulness of series formation. Suppose that, on a certain South Sea island which we will call *A*, we had measured the length and breadth of the heads of a hundred men, and from these measurements of each individual we had calculated the ratio of $B : L — x : 100$, the so-called 'Length–Breadth Index'. Suppose that we found that forty men gave an Index of 65, twenty an Index of 80, and the remaining forty men one of 95, certain amateurs would have calculated an 'average' Length–Breadth Index of 80 [446] for the entire population of the island. These same gentlemen then measure a further hundred men on another island, *B*, and find 10% with an index of 79½, 80% with an Index of 80, and 10% with an Index of 80½, calculate an average Index of 80, and announce *urbi et orbi* as the great finding of their investigation that both islands must be inhabited by exactly the same population group because their cranial measurements are in total agreement. Of course such a conclusion is utterly foolish, and any rational man will doubtless say to himself that *B* has a fairly uniform population (provided of course that all other anatomical features vary within such a narrow range), but that on *A* there are two distinct groups: one extremely long-headed and one extremely short-headed, and that only 20% of the population does not belong to either of these groups but can be regarded either as a hybrid or as having a genetic relationship with the population of *B*. One might then go further, and ask the question whether on the island of *B* hundreds of generations ago the conditions were exactly the same as on *A* today and that over the course of time, through continual mixing, a new uniform type, a new 'race' had formed. Our recent experiences allow us to categorically deny this question: wherever we have the opportunity of observing the long-lasting intermixing of two very different races, we see that every time, and always, a certain percentage of the offspring revert entirely to their heritage in all physical features, and that only a part of the population has really 'mixed'characteristics. Yet even

these intermixed individuals still possess the ability to inherit the latent features of their pure progenitors in their offspring. Thus, a man who has among his ancestors the same number of people from a tribe *X* and a tribe *Y* may have either the characteristics of *X* or those of *Y*, or he may have features that correspond to the formula $\frac{X+Y}{2}$ or similar. If he has the characteristics *X*, he will have also passed these on to most of his descendants; however, if he has features in the nature of the formula $\frac{X+Y}{2}$, then some [447] of his offspring will have this same formula, another portion will have the pure properties of *X*, and a third portion the properties of *Y*. The energy of heredity thus works against the development of mixed groups, and the intermixing of two very different groups does not necessarily always have to be compared with a chemical dissolution, but often has only the characteristics of a purely mechanical mixture.

Whether it is a case of an absolutely real, that is, anatomically-uniform mixed group, seems doubtful; where it was believed to have been proven earlier, that proof had always been due to the elegant method of the arithmetic mean. Existing human ‘races’ may change over long periods and, over the course of many thousands of years, new ‘races’ may arise: either by breeding, or by natural selection, or by adaptation to a changed environment, and perhaps by other causes.

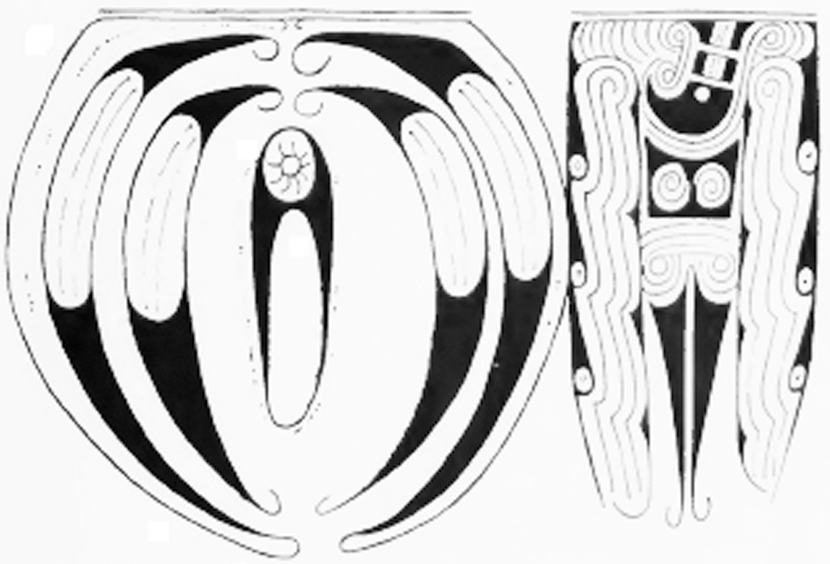


Fig. 3. Branding pattern on a gourd flask, Samarai
⅓ actual size

That a new human ‘race’ has ever been created by mixing two other groups, has so far never been proven, yet the belief in the possibility of such a process seems to be so widespread. As to the actual situation in Oceania, I refer in substance to the work of W. Volz, but not without emphasizing the extreme difficulties [448] that confront an accurate assessment of the Melanesian skull. A typical Eastern Melanesian, such as a man from Viti Levu, or Ovalau, or New Caledonia, or the New Hebrides, can be recognized immediately, at first glance. Yet even in the Bismarck Archipelago all the characteristic features of the East Melanesians appear much weaker, and the more so in New Guinea, so that Volz contrasts the East Melanesian type with a West Melanesian type. It is highly remarkable that both in New Guinea and in the Bismarck Archipelago the eastern Melanesian recedes to the same degree, while other elements appear, which we can refer only to the Australian mainland.

Now, the typical Australian, with his dark skin, his smooth hair, and his very low, narrow skull is instantly recognizable among all the other human groups without any difficulty — if we

ignore his actual relatives, the Dravidas and the Veddas, who are not considered here — but in addition to this well-defined type, there are uncommonly numerous Australians with somewhat narrower and higher skulls that gradually blend into the western Melanesian form, and among whom one could even consider recent Melanesian admixture, if the smooth hair of this branch of the Australians did not have to be argued against such a suspicion, on admixture with frizzy-haired elements. There are indeed currently present in Australia isolated hybrids with Melanesian blood, but these are virtually confined to the area around the Gulf of Carpentaria; they have frizzy hair and exhibit Melanesian elements in their ethnographic possessions: they have bows and arrows, and good outrigger canoes, both of which are completely unheard of among Australians. Therefore we cannot accept a great Melanesian migration into Australia in recent times, although such an immigration does not seem to be rejected for a period during a very remote past, since otherwise another satisfactory explanation for the appearance of higher skulls, similar to those of Melanesians, could not easily be found. The frizzy hair of these immigrants however, seems to have almost entirely disappeared over the course of thousands of years, and is able to reassert itself in only a very few individuals here and there, and in [449] those areas of the continent where a recent Melanesian impact cannot be assumed.

Similarly, it is likely that around the same time, when relatives of the Dravidas and Veddas settled in Australia, a portion of these Indian immigrants spread also over New Guinea and the Bismarck Archipelago. Later, over the course of many centuries, their descendants were carried off by the seafaring Melanesians and later by the Polynesians, with corresponding dilution, as far as eastern Polynesia and even the *ultima Thule* of the South Seas, Easter Island, where craniological investigation has everywhere shown the existence of such Indian–Australian elements with some degree of certainty.

So it seems today, as if the population of New Guinea, apart from various later and numerically-insignificant immigrations and apart from the virtually-unknown inland tribes, is essentially a mixture of two elements, an Indo–Australian and a Melanesian. However, this proposition is not to be regarded as an absolute fact, but is better dressed in the form of a presumption, for the anthropological material which has so far come to us from New Guinea is far too sparse, and does not permit any definite conclusions. Many heads have still to be measured and many hundreds of skulls collected from all parts of the island before we can get a really clear insight into these conditions. The call for procurement of anthropological material for examination, especially skulls and skeletons, hair samples and body measurements, must also be made at this point. There is danger in New Guinea, more so than elsewhere: the current plantation economy, with foreign labour introduced from abroad, is already of little help for the preservation of racial purity. However, the gold finds, which have already been made on several occasions on the island, are particularly disastrous in this respect; sooner or later rabble will flood in from every part of the world, and then, within a few years, everything that has taken millenia to develop will be destroyed and irretrievably lost. Therefore, now is by far the best time not only for ethnographical but also for anthropological collecting; whatever is not saved within the next few years and preserved for science [450] is under increasingly-imminent threat. This means, in fact, having immediate access before it is, forever, too late.

In the meantime I am presenting a small table containing the ratio of the length to breadth, and breadth to height of the skulls of some of the tribes under consideration. The figures are based mostly on quite large sample sizes, and are not expected to be very significantly influenced by other skull series. Only the values for New Guinea are presented with a certain degree of reservation, for the reasons given above. Nor have I dared to separate the two elements composing the population of New Guinea in this table. A clear separation of these elements would require not only a much greater sample size but also a much greater expenditure of columns and numerals than is presented here. Meanwhile the central position that the island in the table occupies, between

mainland Australia and the Bismarck Archipelago, indicates the genetic relationship with the inhabitants of these two regions.

Instead of the mean values, which are totally rejected, the figures presented in the table are those that were found in the majority of the skulls examined, in the group in question; they vary within a few per cent, thus probably within the individual ranges always present in uniform origins.

	L : B	B : H
Australian	71–73	95–98
Brachystenocephlic group, after Volz		
Australian	69–72	89–101
Hyperorthostenocephalic group, after Volz		
Vedda	69–71	95–97
Tamil	73–75	95–97
New Guinea	70–73	102–105
Bismarck Archipelago	69–72	105–108
Viti Levu	65–68	108–112
Ovalau	64–68	114–117
Tonga	85–89	95–97

The ongoing ‘increase’ of the Melanesian form is quite striking, reaching its extreme degree of development in the samples from Ovalau in the Fiji group. Had we worked with mean values, it would, of course be natural to attribute this [451] Ovalau type to the absence of Tongan elements, which elsewhere play a major role in the Fijian archipelago. But after we have excluded the foreign elements in the production of this table, we will be able to explain this conspicuous phenomenon only by the assumption that in the insular seclusion of Ovalau, by natural selection a society has evolved which, apart from other features, is also characterized by extremely narrow, high skulls.

Fig. 4. Branding pattern on the base of a gourd flask
½ actual size

A comparison between the last two lines of the table is particularly instructive; it demonstrates the immeasurable gulf between the Polynesians and the Melanesians, particularly in that part of Oceania where there have been numerous interminglings between the two races for centuries. Nowhere in Oceania have the interrelationships between two island groups been as numerous as those between Tonga and Fiji; the fact that, regardless, the somatic differences have been preserved so well, is a beautiful example of the energy of heredity, and lets us hope that in the not too distant future it will be possible, with regard to the anthropological composition of the population of New Guinea, to substitute positive knowledge in the place of our presumptuous assumptions.

Knowledge of the languages of New Guinea is currently more variable than our anthropological concepts. The initial impression is of a total turmoil among an infinite number of languages and dialects that differ entirely from one another. One and the same language is

understood only among a few neighbouring villages, while comprehension between distant neighbours is impossible, or is achieved only through the medium of interpreters. The same [452] Babylonian confusion appeared also within other Melanesian areas, for example in New Caledonia, where no fewer than twenty different languages were able to be distinguished. We have only begun to see more clearly here too, over the last few years, and for languages of New Guinea the unifying similarities are gradually coming into the foreground against the separating differences. Nevertheless, it must be emphasised that the unity of Polynesian languages already identified by W. von Humboldt stands opposed to a great variety of Melanesian languages, quite apart from the powerful influence that Polynesian elements have exerted on the languages of almost all Melanesian regions.

Only a few languages and dialects of New Guinea have been studied so far; a comprehensive, scientific treatment of the whole area is still pending, and is not to be expected, given the great shortcomings of the sources currently available. It is made more difficult also by the fact that it is mostly amateurs who have so far been dealing with Melanesian languages, and these do not restrict themselves to studying and pinpointing the languages of their surrounding area as such, but immediately immerse themselves in the difficult field of language comparisons, where, of course, they rapidly come to grief. Such a linguist recently emphasised the fluid character of the Melanesian languages and traced it back to the inadequate intellectual powers of the Melanesians — people who knew no difference between arm and hand, between leg and foot, between hair, feathers, and leaves. We know, however, that many Melanesian tribes possess dozens of different words for the individual birds or fish in their area, and the Berlin collection includes a large series of colourful carvings from the Solomons, corresponding with a virtually full list of the of the avian fauna of that island group, and is equally remarkable both from an artistic and a systematically-scientific viewpoint. As for the "inability to think", the stupidity, and the intellectual impoverishment of the Melanesians: it therefore does not seem so bad as many people would have us believe. We are told that Melanesians are also not in a position to distinguish between different sounds: a classic example of this, according to Macdonald in the New Hebrides, one and the same word is sounded *bo*, *fo*, *mo*, *uo*, and *o*. Similarly the people also interchanged 'milk' and 'water'and used for these the word *sien* = *si* = *ti* or [453] elsewhere the word *wa* = *owa* = *wawe* = *va'i* = *ta'i* not only for 'water' but also for 'mother's milk', the female breast, and for the woman herself!! The same is also true of European languages, cf. *la mère* the mother = *la mer*, the sea; *mater* = *mare*! It is the same in Western Australia: in Shark Bay *baba* = water = breast, and in Nichol Bay *bibi* is used for milk, for breast and for woman. It is sheer good fortune that this intrepid linguist does not know the Swahili word *bibi*, which is used for both grandmother and a 'distinguished lady', and also simply for 'girl' or for the beloved — in such a way,what a sea of confusion would pour over the East African languages and also over Arabic, where one's beloved is addressed as *Ya habibi*. Indeed, this concordance of the word *bibi* would certainly have been claimed as evidence of a close genetic link between the Australians and Melanesians, and the African negroes.

Under such circumstances, it would appear necessary to wait for the flood of amateurism to subside, and to dispense with any comprehensive treatment of the linguistic situation of New Guinea in the meantime. Nevertheless, there are several highly competent and serious workers in this field, but they do not extend far enough to allow us a firm verdict on the nature of the languages of New Guinea. I must not omit to plead at this point for the urgent need for careful speech recordings. What is missing above all in New Guinea are accurate monographic studies of all individual languages and dialects; there will always be time left over for comparative work.

This brings us to the purely ethnographical part of my contribution to this book. In a number of separate sections it will deal with a series of questions that seem to me to be important in the current situation.

1. The geographical distribution of bow and throwing-stick in New Guinea and adjacent areas

The bow, which has played such a dominant role throughout Asia as a hunting and war weapon, and has repeatedly achieved an otherwise unheard-of, truly astonishing level of technical perfection in [454] China, in Japan and in Turkestan, seems to have found neither a similar general distribution in other parts of the world, nor to have attained a similar perfection as in Asia. Father Ratzel in particular has studied this situation in Africa, and has come to the conclusion that the bow and arrow were more generally distributed earlier but were displaced by the thrusting spear and, to a lesser extent, by the throwing spear. For the two American continents such an investigation is still pending, and so far we have made just as little progress in reaching a totally satisfactory theory of the geographical spread of the bow in the South Seas. The circumstances are particularly difficult to deal with, both because of the frequent migrations of the Oceanians and because of the deep infiltration of so many different tribes, as well as the seemingly irregular appearance of the throwing stick, which occasionally occurs vicariously in place of the bow, but is often found alongside the bow.

A "throwing stick" is a rod-shaped or blade-shaped apparatus that can launch a spear in roughly the same way as an apple stuck onto a stick, or a stone jammed into a cleft stick. (Cf. my paper on throwing sticks in the *Festschrift für Bastian* (1896) and a supplement to this in my *Beiträge zur Völkerkunde der deutschen Schutzgebiete* (1897, pp.65 *et seq.*)). Such apparatuses are very common in North and South America, and are also known from the prehistoric reindeer period in southern France, an occurrence which may well be traced back to certain Arctic relationships, which "reindeer" indicates. This old French spear-thrower is, however, probably connected with the throwing sticks of arctic America through similar forms in Greenland, and belongs in a group with them. Yet we find similar throwing sticks also in Australia, New Guinea, and the Carolines, and we must spend some time on this.

Fig. 5. Throwing sticks from the Augusta River
1/6 and 1/12 actual size

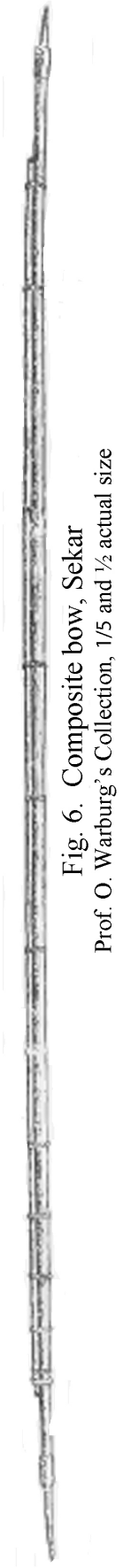


Fig. 6. Composite bow, Sekar
Prof. O. Warburg's Collection, 1/5 and ½ actual size

The actual centre for the distribution of the throwing stick appears to be in Australia; at any rate it is not absent from any of the ethnographic provinces of the Australian continent, and is, or, at least was, almost evenly distributed across the entire great continent. One can now differentiate ten different types [455] of Australian throwing stick that are not interrelated by any transitional form, and always occur only in one particular geographical province, of which it is quite characteristic. However, this does not exclude the fact that these types, which are now so numerous, were originally based on a single, original form, whose age we can hardly estimate in centuries, but rather, millenia. Moreover, all the Australian throwing sticks, without a single exception, have a 'tooth' at their free end, which engages with a shallow indentation on the butt of the spear, for launching. At first glance it is different from all the throwing sticks known so far in Oceania; those always have a pit to receive the end of the spear which, according to the analogy of eyelets and hooks could be called 'female', in contrast to the 'male' throwing sticks of Australia.

The geographical distribution of these 'female' throwing sticks is quite striking; we find them restricted to a few small areas of German New Guinea and in the Carolines; in New Guinea, where they mainly occur, they are very often, without exception, provided with beautifully-carved abutments, as the illustration shows. On the Carolines however, they seem to be quite rare, and actually in the process of dying out. The Berlin collection holds only two throwing sticks from Micronesia: one from Palau and one from Uleai (central Carolines); I am not at all aware of Micronesian throwing sticks in other collections, but from Chamisso we know that at the beginning of this century the throwing stick was commonly used in Yap; since then we have had no news of the occurrence of the throwing stick there. This, together with the rough, unadorned [456] manufacture of the Palau and Uleai throwing sticks, may well lead us to conclude that there we are dealing with the last remnants of a dying weapon, while in Kaiser Wilhelmsland the throwing stick still seems to have been preserved in the full flush of youth. Yet just as the throwing stick is now dying out in the Carolines, centuries ago it could have already died out in other island groups of Oceania and in south and west New Guinea, so that despite the current rare and seemingly irregularly-scattered occurrence, an earlier, wider distribution and thereby a common origin, is possible. The difference between the 'male' throwing sticks of Australia, and the 'female' throwing sticks of New Guinea and the Carolines, which appears so pervasive at first, does not need to be over-estimated. Both types are perfectly consistent for the purpose — only their form changes with the geographical province; this is probably due primarily to the material available for its manufacture in both places. Where tough, hardwood had to be used, it was obvious to carve a tooth out of the solid piece, or to tie one firmly to the throwing stick. However, where cane was selected, attachment of a tooth was technically as good as impossible, and so it had to be substituted by a groove.

Like the throwing stick, the bow is also quite irregularly distributed throughout New Guinea. In the northeast, that is, in the German section, the bow is decidedly the main weapon. Since it is so widely distributed that is totally absent from only a few small districts, as a rule it is also richly decorated by painstaking

wickerwork, colourful feathers, or by beautifully incised carvings. In the southeast of the island, the British section, it is very rare, absent altogether in [457] most districts, and is usually undecorated. The same applies in the western section, in Dutch New Guinea; the bow too is missing from large districts, and likewise seems to be on the way out. On Misol and Salawati, in the MacCluer Gulf, and also in the extreme west of the island, besides the ordinary bow made from palmwood, there is also the bamboo bow, which we otherwise know only from Indonesia and from a few districts of British New Guinea. [458] Whether the appearance of the bamboo bow alongside the palmwood bow can be related to a particular immigration, or whether its absence coincides with the absence of the plant itself, or of the tools necessary for its manufacture, has so far not been sufficiently investigated.

Limited to the extreme west of the island are very small bamboo bows as toys for children. I am presenting an image of such a bow, with its usual decoration, which may well be due directly to the Indonesian influence.

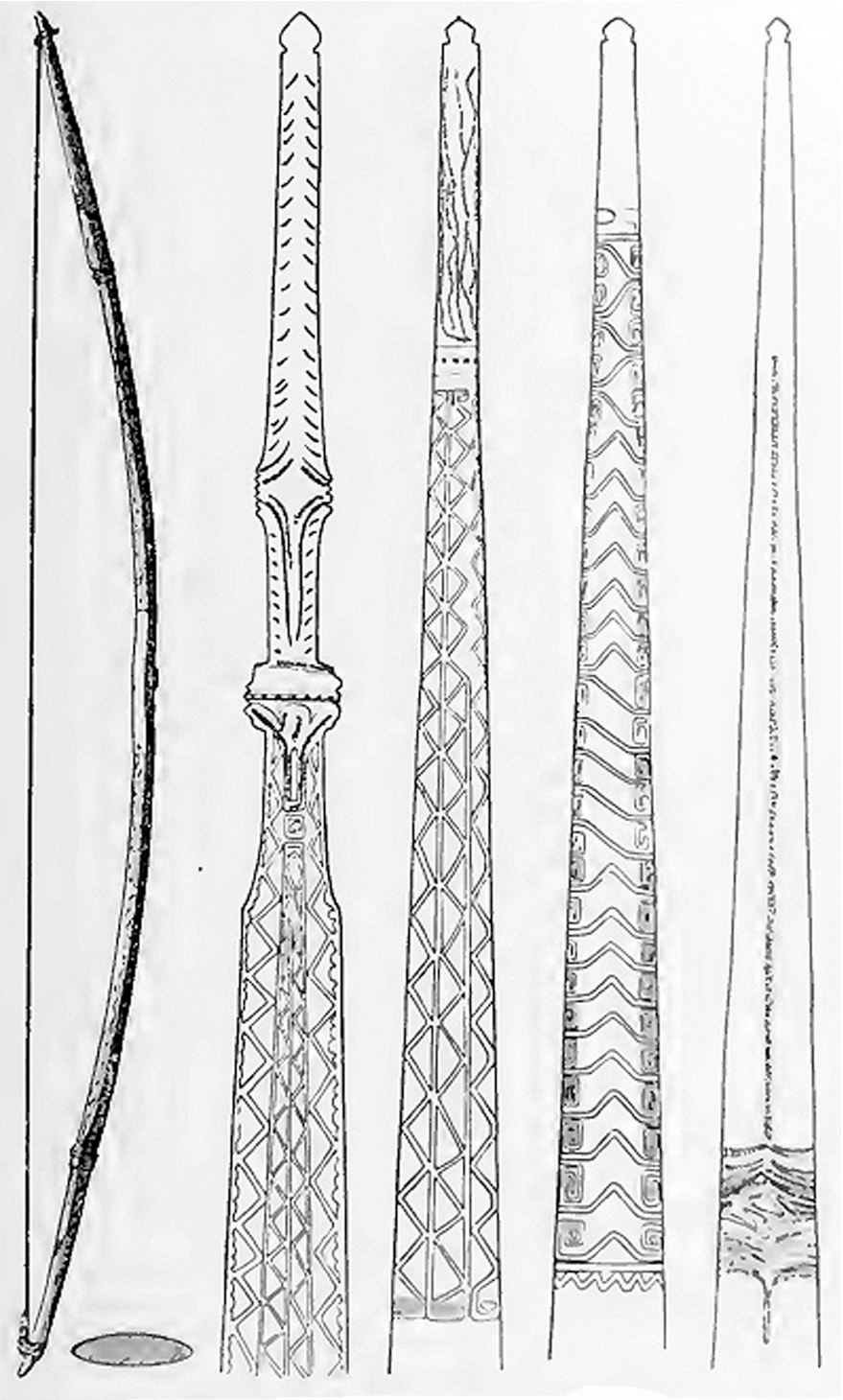


Fig. 7. Children's bows from Sekar
Prof. Warburg's Collection. 1/5 and 1/2 actual size

The bow illustrated above, which Professor Warburg obtained in Sekar and recently presented to the Berlin Museum deserves special attention. It comprises two staves: a longer and stronger one of palmwood and a somewhat shorter and thinner one of bamboo, and is, as far as I know, entirely unique of its kind. Genuine 'composite' bows (cf. *Zeitschrift für Ethnologie*, 1899 February edition) are otherwise restricted to Asia and America, and occur quite exceptionally in the far east of Europe and in a few African regions here and there, under direct Asian influence, if we overlook the bows in old Benin and those of the pygmies on Lake Kivu whose true homeland is

so far unknown to us. Genuine composite bows usually consist of firmly-bonded pieces of wood, masses of sinew and horn, or only of wood and layers of firmly-adhering sinew, or even of several different woods. Such bows are far superior to the simple ones, they have developed into greatly refined weapons in China and Japan, and have been manufactured to an astonishing level of perfection even in the Near East as early as the fifteen century B.C. A variety of such genuine 'composite' bows are the 'reinforced' ones, which are used especially in the extreme northwest of North America; there, on the back of the bow is a thick braid of twisted or plaited sinews, or even a single thick cord, which is firmly bound to the bow by numerous ring-shaped lashings.

On the other hand, the bow in Oceania is consistently simple, and the Sekar bow illustrated here is, in the first place, quite [459] out of place. Yet it is not without analogy in the South Seas. H. Balfour states that Dr Hickson brought with him from New Guinea a typical composite Javanese bow, which by some accident had strayed into New Guinea where it had been strung and treated in a completely wrong and misunderstood way. It would therefore not be totally impossible that our bow could also be a simple and very primitive imitation of a composite bow that had come accidentally into the region. On the other hand, there seem to have been bows in Tonga and Tahiti whose backs had been reinforced by a cord. However, such bows have totally disappeared now; yet W.M. Moseley, from his personal experience in Tahiti, describes them so accurately that any misunderstanding is virtually excluded. Also, the few bows still preserved from Tonga all have a deep longitudinal groove, which can scarcely have served any purpose other than housing a reinforcing cord; however, by the time of Cook and Forster this cord could no longer be proven with certainty, and the groove served apparently for the reception of a second arrow. But we now know that even then the bow had ceased to be a weapon of war in Tonga, and served only for the sport of shooting rats, *fanna gooma*, just as at the time of W. Ellis in Tahiti archery had degenerated so far that people did not even practise shooting at a target, yet during all sorts of ceremonies that had an almost religious character they tended to practise shooting at a distance.

The older descriptions of the Tongan bow are, unfortunately, consistently inaccurate, but one thing is clear from them, that unlike a simple bow, it is not stressed beyond its resting curvature by stronger bending "but completely reversed, so that the bow is bent straight, and then curved towards the opposite side," (Forster, 1778:330). This not without significance for reflex or *παλίντονοζ* is otherwise only the composite bow, or a bow which, in form, inclines towards a composite. From this point of view the possibility must therefore be borne in mind that the Polynesian bow, which we now know only from a period of total decline, did not arise from the ordinary simple bow but [460] from a composite, or reinforced one. In this sense, therefore, the reinforced bow from Sekar might not be totally without analogy in Oceania, and might arouse the thought that the bow might have found its way there from more than one side.

The material known so far, is insufficient to allow a definitive judgment, but the key to solving this question appears to lie precisely in New Guinea. That the bow is totally absent in Australia, the Bismarck Archipelago, and on the Fiji and Admiralty Islands, and in New Caledonia and throughout Polynesia and Micronesia it is either absent entirely or plays only a very subordinate role: these are findings that we simply have to accept as such. Yet when we learn from Sir William MacGregor that in British New Guinea tribes without bows have hammocks, and tribes with bows are not familiar with pottery, this gives us pause for thought; similar findings, once they become more numerous, would certainly contribute much to the knowledge of the true origin of the Oceanians.

2. Bow-shaped instruments for blood-letting

Bows for scarification and for blood-letting have been known to us since 1819 from the Kayapo in Brazil. Bartels made use of it in his *Medizin der Naturvölker* for the Indians of the Isthmus, and in

my discussion of this book in the *Archiv für Anthropologie* I pointed out that this method is not unique but is equally practised among the Maasai and other East African herdsmen as well as in New Guinea. I would like to go into greater detail on this last statement. The blood-letting bow is not known from Dutch New Guinea, but it is quite familiar from many districts of German and British New Guinea, and appears to be evenly spread throughout the entire east of the island. In German New Guinea it is mostly tubular; in British New Guinea, as it appears, it is always made from several tied grass stems only 26–30 cm long. The arrow is armed with a small pointed shark-tooth (more recently with a sliver of glass), and runs into grass loops, which are looped both around the middle of the bow and around the centre of the bowstring; it can thus be shot into a very definite part of the skin, as though from a crossbow. [461] Such a bow from Astrolabe Bay is illustrated by Heger (1894) in the Viennese *Mitteilungen der Anthropologischen Gesellschaft*; the figure below shows one from Puinapaka on Yule Island in the Gulf of Papua, British New Guinea.

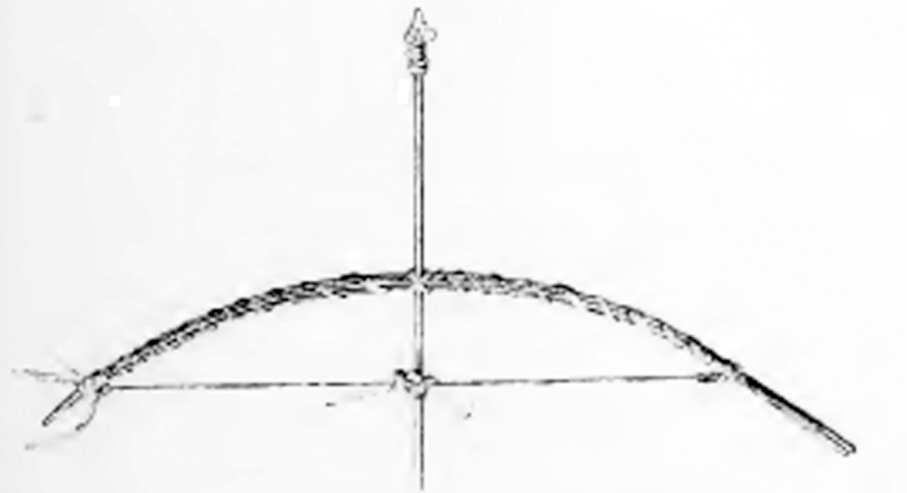


Fig. 8. Blood-letting bow from Yule Island, British New Guinea
¼ actual size

There it is called *nité* = shark's tooth, and is used mostly for headaches as well as scarification and actual blood-letting.

A very similar instrument with the name *Balestra* was used in the seventeenth century on Mount Athos, where twenty thousand monks were said to have lived, and also in Athens [462] and some Greek islands. I present an illustration, after the book by Jacob Spon (1690). It consists of a small bow of fish-bone, with a length of gut as a bowstring. The bow is fastened like a crossbow to a copper tube, which is slightly lobulated at the top so that the vein caught between the short lobes cannot escape; the iron arrow itself is blunt and lanceolate.

We find the same device in Brazil, in East Africa, in New Guinea, and in the Eastern Mediterranean, and we are faced with the question: whether it has been reinvented each time or whether it can have reached each area by trading. The answer to this question requires, firstly, an in-depth history of bleeding, which has not yet been written, and also a much broader ethnographic basis than that which exists so far. From India, both the banana and barkcloth reached both Africa and Oceania; if such a bleeding-out bow were similarly proven in India, its appearance in three of

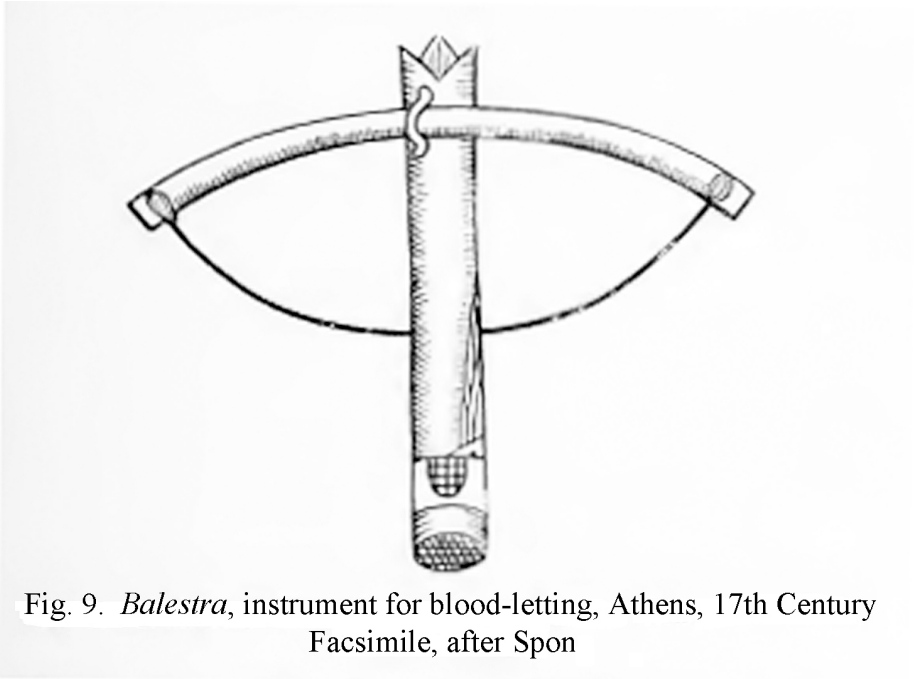


Fig. 9. *Balestra*, instrument for blood-letting, Athens, 17th Century
Facsimile, after Spon

the four above-mentioned geographical areas might be easy to understand; its occurrence in Brazil would, however, be difficult to explain. In any case, the question is not yet clear, and much material will still have to be gathered before it can approach its solution. However, it should now be regarded as certain that the blood-letting bow can be invented only in those ethnographical provinces where the great bows, and arrows, are familiar items.

3. Shields for hanging

Shield and spear are generally considered inseparable. In the dim, dark past we see that the position of the "Scaean" gate was brought about by wanting to force the attacking spearman to expose his right side, unprotected by the shield, to the weapons of the defenders. We find exactly the same positioning of the inner gate of the fortification, directed to the left, today in tropical Africa, and the shield almost always appears to be used only in defence against the spear. There are, however, small fist-shields used against daggers, and shields are even used against clubs, which, however, usually look like sticks, or sometimes quite like bows, some being actually mistaken for bows — nevertheless, the shield must always be held in one hand, leaving only the second, usually the right hand, free for attack, if the warrior does not have a special shield carrier. Only the Mycenaean shields were hung round the neck or shoulder, like armour. Elsewhere the use of bows and arrows has often led to the invention of real armour, as can be seen most beautifully in East and Central Asia.

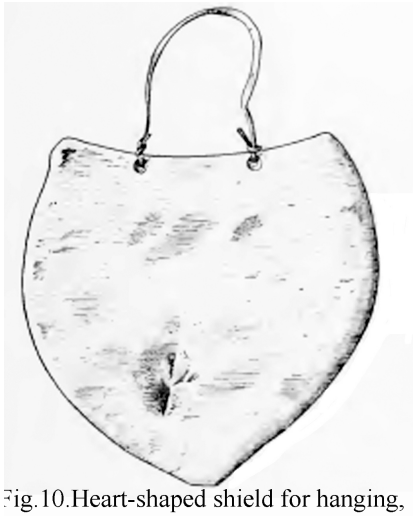


Fig.10.Heart-shaped shield for hanging, Astrolabe Bay
Kurt von Hagen Collection, 1/6 actual size

All we now know from Kaiser Wilhelmsland is protection from bows with actual shields. Figure 11, for which I am indebted to Herr Schmidt in Charlottenburg, shows a man from Astrolabe Bay with a large, circular shield, which he has hung round his shoulders, freeing both hands for handling his bow and arrows. Such shields, which are nearly one metre in

diameter and often weigh fifteen pounds or more, are quite common in the Astrolabe Bay area, but so far nobody seems to have noticed that they are not held in the hand but are carried hung round the shoulders. Nor is this emphasised in the text of Parkinson's splendid photograph of [464] men from Siar (Meyer and Parkinson, 1900, Plate 34. The instrument in the hand of the man standing in the middle is, by the way, not a dagger, as it is called in the text, but obviously a spatula for betel-lime). Yet it can be seen quite clearly that one of the people is carrying the big, round shield on his left shoulder, and the other on his right.

Fig. 11. Man from Astrolabe Bay with a round shield carried on his left shoulder
From a negative owned by Herr Schmidt, Charlottenburg

However, in Astrolabe Bay there are also smaller, heart-shaped shields of this kind, which have two bored holes on the upper edge, [465] and are hung around the neck on a thin cord or bark strip (see Fig. 10), as well as irregularly horizontal-oval or roundish shields, which hang in net bags or are enclosed in a rectangular frame (see Fig. 12), and are similarly hung round the neck or around one or the other shoulder according to need. It is clear that such small shields cannot, by themselves, afford very substantial protection, but they do offer the great advantage of leaving both hands free. It is also reported that the men have a great deal of skill in twisting and turning their whole body with the shields, as occasion demands, from situation to situation.

Fig. 12. Horizontally-oval shield from Astrolabe Bay, to be carried in a reticular sac around the neck or on the shoulder

Recently, we have even been told that the familiar, beautiful, heart-shaped pieces of plaited jewellery with split pig's teeth, *Nassa* shells, and red paternoster peas, which we first came to know from the Dallmann Harbour region, through Finsch, who very correctly described it as "chest war-jewellery", was not merely an ornament, but served actually as a small shield, which is supposed to protect the heart from injury by arrows. Such an opinion contains much that is disconcerting in the first place; but if we take into account the actual insensibility of the natives, and their almost total immunity against all kinds of diseases from wounds, we can finally become acquainted with the idea that the people possibly restrict themselves, in the interest of a device as light as possible and of little hinderance, to protecting the heart itself, and to dispense entirely with the coverage of other, less vital organs. [466]

4. Drills and similar tools

Two types of drills are certainly indigenous to New Guinea and the neighbouring islands, that is, not introduced by Europeans. I have described one type in detail in my *Beiträgen zur Völkerkunde der Deutschen Schutzgebiete* (1897:74 *et seq.*), which is why I can do it here briefly, with reference to the figure given in that work. An even more detailed description is now available in the excellent *Beschreibender Katalog der ethnographischen Sammlung Ludwig Biro's aus Deutsch-Neu-Guinea (Berlinhafen*) (Biró, 1899). The second type has to be dealt with in rather more detail.

The first type is especially familiar in Berlinhafen, where it is used in the manufacture of the big *Tridacna* bracelets called *rapa*. The tool consists essentially of a bamboo cylinder, about ninety centimetres high and seven centimetres in diameter, and acts like a real crown drill. Near the upper end is a transversely-secured oblong stone, which serves both as a handle and as a weight; at the lower end, a sharp, circular, cutting edge is produced simply by repeated use. Thus the tool corresponds precisely to the requirements that the prehistorians among us have, for a long time, endowed to the implement with which prehistoric man pierced his stone hammers. In unfinished drill holes of such hammers, it can be seen that a cylindrical spigot has stopped in their centres, and that the drill must therefore have been tubular. Such a device, of course, indicates, naturally, a very great saving in time and energy, and in our time it is applied to the blasting of holes in tunnel construction and, as it appears, has even been "specially invented". Prior claimants to the invention

are undoubtedly the 'savages' of New Guinea [467] and our prehistoric ancestors. The manner in which the piece to be drilled is secured, was not quite clear to me when I first described the device in 1897. I can do so now, from a specimen of the Wendland Collection which has since come to us and since L. Biro's publication. The thick, round *Tridacna* disc from which the armband is to be made is tightly and firmly braided around the edge, so that only the same area remains free at top and bottom as the circumference of the drill, or corresponds with the inner circumference of the bracelet. The item prepared in this fashion is then placed on a board where there is a pit to receive it, where it rests firmly and immovably. Using a specimen from the island of Angel, Berlinhafen, the figure illustrates above, the board and the braided piece of *Tridacna* wedged into it, and below the same in cross-section, but without the braid and after the beginning of the drilling.

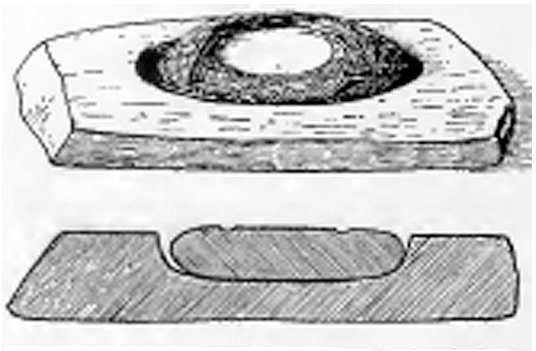


Fig. 13. Tridacna disc, prepared for boring. Berlinhafen. Wendland. ¼ actual size

According to Biró, usually only the inner surface of the armband is bored-out in this way, the outer surface is cut freehand. Of course, with a drill of larger diameter the outer surface is produced in the same manner, although this is rarely the case. Theoretically, it would, of course, be possible to drill both surfaces at once by interposing and firmly wedging two such bamboo cylinders, thereby obtaining a finished bracelet in one operation. It seems, however, that the practical difficulties would be greater than the theoretical gain; such concentric drills do not seem to occur anywhere. Yet even the simple crown drill must appear to us as a very remarkable invention, which having been made quite independently of any foreign influences [468] surely bestows great glory on our "savages".

The second drill, indigenous to the South Seas, is represented in its simplest and most typical form by the implement illustrated in Figure 14. It consists essentially of a simple woo2den stave with a hard, stone point, a *Tridacna* sliver, a small shark's tooth, or a pointed snail shell fastened to its lower end. Similar devices are spread almost all over the South Seas; the drill illustrated here, probably the smallest and most elegant of its kind, comes from New Ireland, where it is used to pierce the small pearl discs for making shell money. A hard little sliver of stone is wedged into the bottom of a very thin, soft wooden stick and secured with a thin thread.

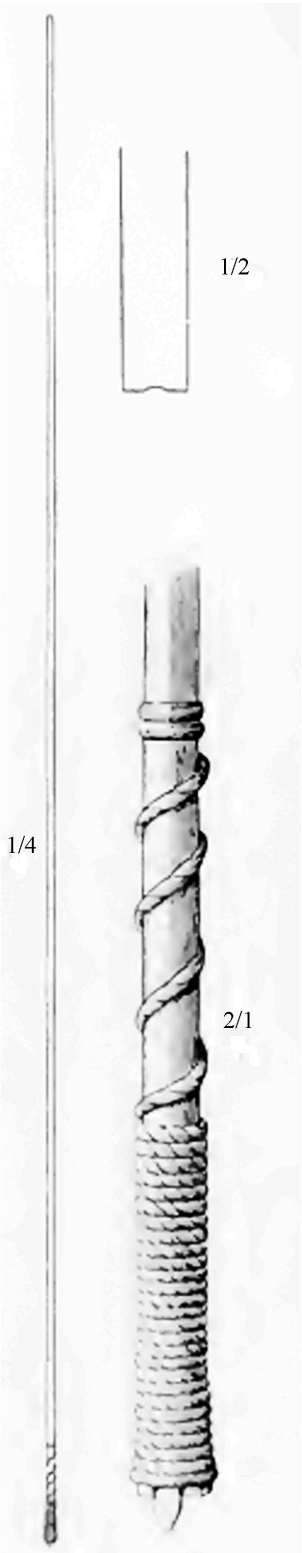


Fig. 14. Drill & grinding stick for the production of shell money

Very similar drills, only larger, and reinforced below with a pointed auger shell instead of a stone, are often found in New Guinea. Even the small turtleshell earrings from the Tami Islands near Finschhafen are produced by such a device, as emerges from a beautiful technical series that the Berlin Collection owes to Dr Schellong. According to an oral comment from Herr Senfft, who used his long-term stay in Jaluit for very detailed ethnographic research, the shark teeth, which are used in the fitting-out of spears

and daggers, and often elsewhere and Nauru as well, are always pierced with the small, sharp teeth of *Carcharias lamia*, which are clamped in just such a rod-drill. Everywhere, these borers are drilled between both hands, just like the fire drills in Africa and Australia. In this connection it is worth mentioning that its use as a fire drill is entirely unknown in the South Seas, while the simple rod, which is twirled between the hands, is used everywhere for boring holes. As far as I know, with very few exceptions, (cf Finsch in the *Wiener Annalen* VIII, 1893:7 [275], where twirling is mentioned for "Micronesia", but without further details or overlays) on all South Sea islands fire is never created by twirling, but always by back and forth [469] rubbing of a harder wood in a groove of a softer wood. (Only in British New Guinea, among the Koiāri inland from Port Moresby is there found another method of creating fire, as Finsch first reported in the *Wiener Annalen* III, 1888:5 [109] 323. There, a bunch of bamboo strips are rubbed back and forth on a cleft branch. Finsch's description is unclear and does not appear to agree well with the specimens handed over by him to the Berlin Collection; in any case, this is a procedure analogous to the "fire saws". This is, as far as I know, mainly in Burma, but also occurs from time to time in Indonesia, and perhaps also in a few Australian tribes yet also in India.

On this occasion I would like to draw your attention to the fact that the method of creating fire by rubbing back and forth in a furrow, that is by "ploughing" as Hough maintains, which is otherwise restricted to the South Seas, had been documented by Ascherson also in the Libyan desert, as extensively reported in the *Zeitschrift für Ethnologie*, 1876, **8**:351, but remained as good as unnoticed). This gives rise to the thought, and possibly the conjecture, that the relationship between the drill as a hand tool and the fire borer is not as simple as usually assumed. A discussion of the origin and history of the artificial production of fire would be incomplete if it left out such phenomena of geographical dissemination. Unfortunately, our present knowledge of the spread of the various types of fire production is still so incomplete that such an observation would, at the moment, have a philosophical rather than a scientific character, and would necessarily be lost in useless speculation. I am therefore restricting myself now, and in the future, to mentioning the importance of collecting specimens. Firstly, we must really find out whether throughout Australia only the fire borer was familiar, and whether it was totally absent in New Guinea and the other South Sea islands, and how these situations apply to India and Indonesia, before we are able to treat this question other than merely speculatively.

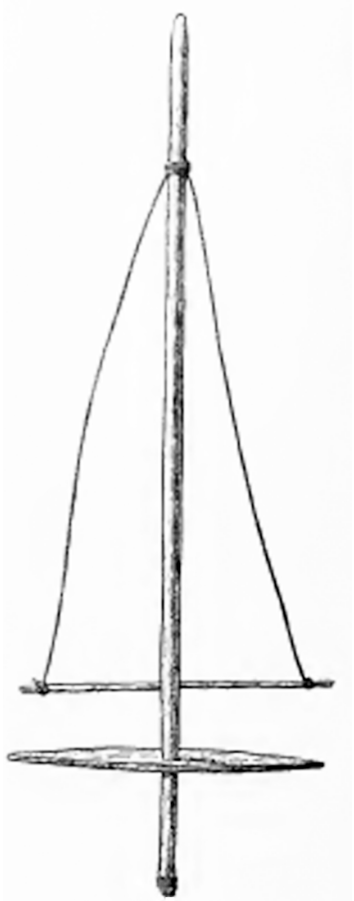


Fig. 15. Drill
after Warburg, probably
from Sekar. 1/6 actual size

At the lower end there is only a spindle-shaped wooden rod instead of the usual flywheel; otherwise, the specimen is perfectly consistent with those from Port Moresby.

In addition to the two types of drills mentioned so far, we find a third in New Guinea: a typical example is illustrated here (Fig. 15). This is a drill just like those generally in daily use by craftsmen and sailors in the last century, and still occasionally found here and there in culturally-backward areas but also used in individual, particularly fine, subtle work. In New Guinea [470] the implement consists of a round wooden stick with a sharp sliver of stone, a fish tooth or occasionally an iron nail fastened on at the bottom, and the drill cord bound on near the top. This is provided with a wooden rod beneath, and is designed so that once it is rolled up, the drill is rotated by simply raising and lowering the rod. Nearly always such a drill carries a swinging body, either a big, heavy disc of wood or stone, a real fly-wheel or at least a wooden stick that serves the same purpose even if it works less effectively.

The question that immediately springs to mind is whether we are dealing with an independent invention or with a European import. This question too cannot be answered with certainty yet, because we have so little information about the distribution and about the indigenous name of this device in the South Seas. In the last few years its occurrence was considered to be very rare; thus it emerges from the table of comparison in the 1893 *Ethnographische Beschrijving von Nederlandsch Nieuw-Guinea* by de Clercq and Schmeltz that the learned authors knew it only from Astrolabe Bay, Port Moresby, the Fly River and, of course, Indonesia, but not from the whole of Oceania. Whether it was actually missing from Dutch New Guinea, or whether the illustrated specimen had only been imported, I cannot judge, but in British and German New Guinea it is very common, and, in any case, much more common than emerges from that table. Likewise, the statement that it is otherwise absent from the entire [471] South Seas cannot be maintained at all. On the contrary, it is so generally widespread over the entire area from New Caledonia to the Marquesas islands that it would probably be easier to list the groups of islands on which it has not been found so far, than those that we already know about.

From a Marshall Islands' specimen in the Berlin Collection, to which Finsch (1883) gave the local name *dribal* (printed also in *Wiener Annalen* 1893 **8**: [444] 155.) it seemed to me almost as if we were dealing with a European import, because not only did the device itself seem quite European but also the name, which could be connected only with '*Trepanum*' and 'Driller'. However, the word *dribal* is missing from the only dictionary of the Marshallese language published so far (written by Franz Hernsheim, Leipzig,1880) and is also not authenticated elsewhere and might be based on a misspelling or a lapse of memory. That Hernsheim lists a word *dribelli* = 'stranger', is probably just coincidence, and is mentioned here only for the sake of completeness. On the other hand, Herr Senfft, who is currently busy with the publication of his comprehensive linguistic material from the Marshall Islands, advises that there the correct name for the drill is *kimlidsch* oder *keïnreïl*, but on account of its shape it is also simply called *rabuêl* = 'cross', while the Jaluit name for the rotary drill armed with a shark's tooth is *men in eril*.

In any event Finsch's *dribal* must now be regarded as no more than a proof of the European lineage of the drill in the Marshall Islands; nevertheless, the question of the origin of the drill in the South Seas must still remain open. (In this connection I would like to point out that in the Banks Islands a saw consisting of a spirally-wound bamboo strip is called *sao-sao*. Is this indigenous and then naturally onomatopoeic, or adopted from an English sailor?) When you think how rapidly European appliances and skills have spread in Oceania, when you see, for example, that the Samoan women sew their children's clothes on a sewing machine, or when one learns that the old kind of fire production by 'ploughing' in a furrow is already totally replaced by Swedish matches on many islands, and on others used only in the prisons, where the people [472] obtain the otherwise unobtainable fire for their pipes by rubbing on the floorboards — then you will always have to think about the possibility that the Oceanic drill too has been learnt originally from European sailors. In fact, it seems hard to believe that such a sophisticated device has been invented more than once, although I would like to admit that related forms such as, for example, the drill with the bow and the drill with the cord, and with the axial bearing held in the mouth in northwest America, could have developed independently of European influences. At any rate, further investigations in this area would be highly desirable and worthy of merit, and may eventually lead to a definite resolution of this question, which, for the time being can only be challenged and illustrated, but not answered.

5. Developmental history and geographical distribution of the headrests in New Guinea

Among a great many peoples, hard little benches substitute the position of our pillows; we know them from ancient Egypt, where they were already in use a thousand years before the beginning of our calendar. We find them still today in a very large number of African countries, from the Zulu in the extreme southeast of the continent, to Abyssinia; we know them from East Asia, where they are made not only of wood or ivory but often even porcelain, and we find them in the most varied forms in the South Seas, although they are not generally widespread but are confined to some groups of islands and completely absent from others. We miss them for example from the Bismarck Archipelago, the Solomon Islands and New Caledonia, most of the islands of Micronesia, New Zealand, the Marquesas and the Hawaiian group, whereas they are found regularly in Samoa, Tonga, Fiji and Tahiti.

However, the headrest achieves its greatest development by far in New Guinea. Admittedly it is not uniformly spread over the whole island, and seems to be totally absent from the entire southeastern part, that is to say, British New Guinea, yet it is one of the most beautiful and significant elements of ethnographic possessions in the north and west of the island, because of a variety of forms and types that excites our greatest admiration. [473]

Looking at this initially confusing multiplicity, after the original forms and according to defined laws of development, the type of headrest from Finschhafen illustrated in Figure 16 seems to be the closest approach to the basic form, from which the other types must have evolved. At least I have been able to establish without any problem (von Luschan, 1897:66 *et seq.*) that a second form of headrest, which is found in German New Guinea (cf. Figures 25 and 26). must necessarily have developed from this basic form.

If we look more closely at this master-form, we see before us a one-piece, carved wooden unit, about a span high, consisting essentially of two, superimposed plates, three-fingers-wide: the upper one slightly saddled-shaped to receive the head, while the lower one, more curved, rests on two human figures, back to back, kneeling on a common plinth. These figures are always fashioned like these in all the headrests, as if they were laboriously supporting a big, heavy load, and in the following they are therefore referred to simply as *telamons*, for the sake of brevity. It is quite obvious that they do not appear over and over again on these headrests merely by chance, or merely on an arbitrary whim; yet their significance has not been investigated. Finsch's early view that the works of the Melanesians are not based on any deeper thought, and that they owe their existence only to fantastic, momentary whims, can now be regarded as totally vanquished, but probably the greatest culpability is that later travellers have so far failed to explore the true meaning of these works of art.

Fig. 16. Headrest from Finschhafen
Finsch. About ½ actual size

It is quite possible that our *telamons* are connected with an ancient mythological idea, and they can be compared to the two males on the Buka spears, and the two figures in eastern Polynesian ornamentation, which people have tried to trace back to Rangi and Papa, to Heaven and Earth. The great administrative upheaval which our protectorates in the South Seas are about to meet at this moment will hopefully result in a better ethnographic investigation [474] of them, and significantly enlarge our very limited knowledge in the field of oceanic ornamentation. In the meantime we must definitely fall short in entering into the inner meaning of such carvings, and so we must confine ourselves to the consideration of their external form.

Yet this too is very instructive: these headrests, namely, are to be regarded as proper chapiters, supported by two *telamons*. I have discussed this in detail elsewhere (von Luschan, 1897:67 *et seq*., Plates 39 and 46. The two headrests, Plate 46, figs 2, 3, and 4, show clear astragals). I would only point very briefly to the fact that the upper plate corresponds to the *abacus*, the middle corresponds to the *cymatium*, and the strut between the two a stunted *canalis* = *pulvinus*. The fact that the peaks below the *cyma* can be interpreted as the vestiges of the *astragalus* does not appear clearly from the specimens depicted here, but appears to be easily recognizable in very many other headrests.

The appearance of such a capital, an absolutely Near Eastern motif in the South Seas, at first glance is somewhat astonishing, but the way in which elements of Western Asian art could reach New Guinea is precisely defined by Gândhâra art and by Borobudur, and no one will deny that art forms that have come from Asia Minor to India and to Java could have been carried a bit further east as well. Far more remarkable than the fact that an antique [475] capital could get to New Guinea is the additional fact that it could be preserved for so long in a form which is still recognizable as such. This must be regarded as a particularly fortunate coincidence: when we have the previously-described Finschhafen type in front of us we can easily fall back on the capital — if we did not have such a component, a lot of headrests in New Guinea might be difficult to interpret.

For the multitude of variations of the basic form which these headrests from German New Guinea carved from a single piece of wood, (i.e. monoxylic), have undergone, I must refer to the work mentioned above. Here we must become familiar with the Dutch forms. They are spread

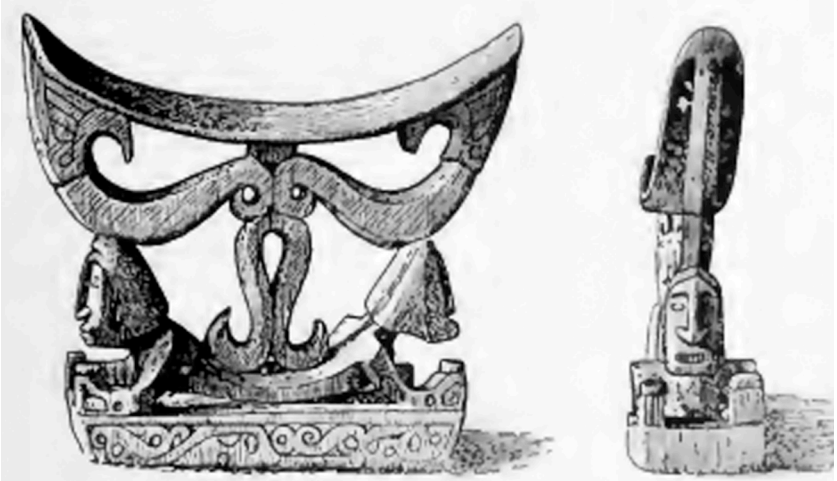


Fig. 17. Headrest from Doré, Dutch New Guinea
Bastian, 1880. ¼ actual size

apparently over the entire northwest of the island, but their most beautiful, unique development is found in the region of Doré. Admittedly the three pieces illustrated in Figures 17–19 demonstrate that this development is rather more a decline: only the first of these headrests allows the old forms to be recognised without difficulty. *Abacus* and *cyma* are still distinctly present, but *canalis* and *pulvinus* are barely indicated, while the *astragalus* has virtually disappeared. The *telamons* have also changed completely: they still support the capital with their heads, but they have given up their original standing or crouching position and lie on their stomach, supporting themselves on their elbows with outstretched arms, often reminiscent of sphinxes. A new element in the headrest [476] depicted here, and in many similar, is a type of strut-column, which has only a purely-mechanical significance and is supposed to support the capital better than the widely-separated heads of the *telamons* could do on their own. This column rests, with a short scroll, over a broad area of the intertwined bodies of the *telamons*, and supports the middle of the *cymatium*.

However, the decline goes much further in other headrests of the Doré type. Figure 18 shows the *cymatium* limited to a quite inconspicuous strip running along the ridges of the

telamons; Figure 19 illustrates how the *cymatium* disappears completely, and [477] its function is simply replaced by the bodies of the *telamons*. In this case the space between these and the *abacus* becomes so great that it must necessarily be filled by support struts. In the headrest show in Figure 18 this is still quite simple, and completely analogous to the strut column that we found in Figure 17 between *abacus* and *cymatium*; in Figure 19 we see it dissipated in inextricable tendrils and volutes — the whole ornamentation of the northwest of New Guinea gives rise to a tendency to flourishes, which is most remarkable, and has also been recognized by Schurtz. It is, in fact, not impossible that these Doré flourishes can be brought into a genetic connection with the splendid spirals of Maori art; in any case, we see often enough in Dutch New Guinea the beginnings of real spirals; so too here, very beautifully, on the arms of the *telamon* on the right in Figure 19.

Figs 18 & 19. Two headrests from the Doré region, Dutch New Guinea
⅓ and 1/5 actual size

Incidentally, in this piece the scroll structure overruns all the actual basic forms in such a way that the *telamons* even cease to wear the head plate directly, and remain separated from it by a broad layer of scrolls. Without the simple forms illustrated in Figures 16 and 17 it would no longer be possible to properly understand this headrest.

A totally different development is represented by the four forms illustrated in Figures 20 to 23, which lead us back to German New Guinea. In the study already mentioned (von Luschan, 1897) I have shown that in many headrests [478] the two *telamons* of the Finschhafen type approach each other so closely as to form a single figure. Two figures are created, standing together back-to-back; they then rotate 90° so that the heads no longer look to the right or the left but forward and back; then the two figures merge into one, which still bears a Janus head. Finally, the second head also disappears as its face

Fig. 20. Headrest from Potsdamhafen
Tappenbeck. About ½ actual size

gradually changes into an occiput, often richly ornamented; thus the two *telamons* have become a single *telamon*.

Here a second developmental series begins. How this happened in detail is, perhaps, not to be determined with certainty. Presumably the process was that such headrests reminded the people of a woman bearing one of the well-known, round-shaped bowls on her head; this is also a frequently-occurring decoration motif in northeast New Guinea, and it is a close association that we also find it used in the headrests. If this was the process in detail or otherwise — in any case we find certainly the finest headrests in the area round Potsdamhafen, where the single *telamon* is replaced by a female figure, if you will, a *karyatid*. Figure 20 shows a very typical example of the genre; the very crude and unflattering figure stands on a plinth and carries a simple, slightly saddle-shaped plate, just as the local women usually carry the big food bowls there. That this plate was originally a capital that has shrunk down to an *abacus*, no one who had not studied large series of New Guinea headrests, would have been able to guess.

Fig. 21. Headrest from Tappenbeck's "Twenty-Mile Island" on the Ramu
about ⅓ actual size

The headrests of the type shown in Figure 20 now form the starting point for a new series, and their continuation is first found in the type shown here in Figure 21. [479] It closely follows the headrest just described, and differs from it essentially only in that the forearms of the female figure have become small males, which, like the main figure, carry and support the head plate (*abacus*) food dish. This development of human arms into whole figures would contradict all the principles of Melanesian art. However fluid this may be, there are limits to it as well, and the scene just described would be totally incomprehensible within these limitations. I shall soon be able to demonstrate that this is not actually a real transformation, but a new acquisition of foreign elements. I would first like to follow the further development of this type, and so I can come back to its real manner of origin only later (page 485). This is just as interesting as it is simple and instructive, but provisionally we want to accept the type as it is at present, and then see how it evolves. This is borne out by the headrest illustrated in Figure 22, where the small males have re-emerged from the forearms of the female figure; they

Fig. 22. Headrest from Potsdamhafen
Tappenbeck, ⅓ actual size

have become bigger, and now stand as self-supporting figures between *plinthe* and *abacus*, and have thus become as long as the middle figure but much slimmer and remained so. [480]

A further (and the final stage) of this developmental series is shown by the headrest illustrated in Figure 23. Here the figures have all become equally large and are treated in the same manner; their number has also increased by one, and now four support the head plate. On the magnificently stylized heads of these figures with their goatee beards and their caricatured Jewish-looking profile, so surprising in many living Papuans, I would like to draw attention, only incidentally, to the fact that the earlier pieces of this series illustrated here are artistically of a very high standard, even if they do not always correspond with our own ideas of beauty.

Fig. 23. Headrest with support strap, from Bertrand Island
Kurt von Hagen Collection, about ½ actual size

We have now seen how a Janus has developed from two *telamons*, and from that a *caryatid*. We have also seen that these *caryatids* have small *telamons* in place of their forearms; that these *telamons* later become bigger; and that finally the headrest is supported by four equally-big figures. In the Doré type, on the other hand, we have found that the two *telamons*, which in this case [481] must have formed an essential part of the headrest originally, are transformed into sphinx-like beings, regress in size, and are overwhelmed by seemingly meaningless figures. Apart

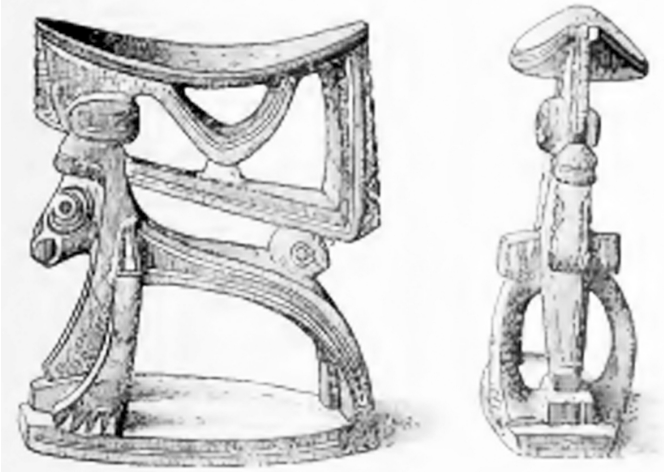


Fig. 24. Headrest from Tami Island
Dr Krieger. ¼ actual size

from the types described so far, there appear, although far more rarely and mainly in the Finschhafen district, forms that cannot be included in this scheme. As I have shown in the much-quoted *Beiträge*, among these rarer forms only one type occurs more prominently, where the *telamons* are replaced by an eagle or a pig. The headrests with the eagle are therefore more remarkable because at least in some of them it can clearly be seen that a serpent also belongs to the eagle, but this is often very much reduced and indicated only by a ring or by a piece of carving which has already become quite incomprehensible. Yet it is quite clear that the representation is derived originally from a struggle between eagle and serpent and therefore ran parallel with the well-known, large carvings from New Ireland, in which an eagle is also depicted in a battle with a serpent (cf. my *Beiträge*, Plate XLVII, Figs 8 and 11). We will therefore not hesitate to attribute the motifs on these headrests to Garuda and Nāga, that is, to pure Indian influence. (On the Garuda-Suparna as the mortal enemy of snakes, cf. principally Grünwedel, *Buddhistische Kunst in Indien*,1893:47 *et seq.* and p.97). [482]

Still other forms are so stylized and degenerate that we are currently unable to interpret them; incidentally, they are so rare that, compared with the great quantity of easily understandable forms they make hardly any impact.

I would like to highlight only the headrest illustrated in Figure 24. It is quite remarkable, due to its unusual structure and its asymmetry. A related specimen, illustrated in the atlas of Finsch's *Samoafahrten*, Plate III, Fig. 1, current whereabouts unknown, from Finschhafen is perhaps even more beautiful and interesting; the single *telamon* lies flat on its stomach, as in the Doré type, but with its legs in the air so that the actual headrest is supported in almost a symmetrical manner by the head on one side and by the figure's feet on the other.

Fig. 25. Headrest on rattan feet, Krauel Bay
K. von Hagen's Collection, ⅓ actual size

It is unquestionable that this piece really does come from Finschhafen, and was published by Finsch explicitly with this statement; but it seems as if later authors, misled by a not quite clear arrangement of the caption beneath the plate, have considered this headrest to have come from Teste Island. At least, this is the only explanation that I can find, that Finsch is designated as the source of the occurrence of a headrest [483] on Teste Island. As we shall see later, headrests are almost totally absent from the southeastern part of New Guinea and the offshore islands, and Finsch has never reported anywhere that he had found them on Teste Island.

All the headrests described so far are monoxyl appliances, carved from one solid piece. In contrast to these, there are also headrests in New Guinea where the actual bench rests on lashed and clamped feet made of rattan. For more detailed information I refer to Plate XLVI and page 69

et seq. of the *Beiträge*, where this type is noted and described in detail in numerous illustrations. At first, these compound headrests seem to be completely different from the monoxyl groups, and have nothing in common with them. On closer examination, however, we discover a curious parallelism, which is so characteristic of the essence of Melanesian art that it deserves to be explained at this point. Namely, it is found that with very many of these headrests, just as with the monoxyls, there are still clear remnants of a capital: if, for example, one compares the headrests illustrated in Figures 16 and 25, it is found that the *abacus* and *cymatium* are present also in the latter, and even have the same crescent-shaped interspace as in the Figure 16 type; in one case it is

Fig. 26. Headrest on rattan feet, Augusta River
K. von Hagen's Collection, ¼ actual size

filled in by two beams, [484] in the other case by two masks, one of which faces forward and one backward, but the analogy is striking, and can be shown in the same way in the entire series of similar headrests. In many cases there are two masks next to each other on each side, so that four masks in total correspond to the *canalis*; however, with great regularity we also find in a considerable number of such headrests, at the side, where *abacus* and *cymatium* touch each other, a further mask on each side, which then of course corresponds with the *pulvinus*, whereby it is certainly no coincidence that *canalis* and *pulvinus*, these two interconnected, uniform, elements of the ancient *capital*, are uniformly represented by masks here too, and that those corresponding with the *canalis* look forward and backward, and those corresponding with the *pulvinus* are at the sides.

Fig. 27. Headrest from Humboldt Bay
Missionary Bink Collection, 1896. ¼ and ⅛ actual size

This can be studied in detail on Plate XLVI of the *Beiträge*; I refer only to Figure 26 of the previous page which, at least, shows the *pulvinus* masks very well; however the *canalis* masks are replaced by a cross-sectioned figure in quite unusual, arbitrary ways, deviating from the norm.

The fate experienced by the *telamons* in these headrests is particularly interesting and instructive. They have not been simply replaced by the rattan feet as might be initially assumed, but only — displaced! We certainly recognize them at the lateral ends of our headrests in the two human figures, which would otherwise be [485] totally incomprehensible. They have been displaced by the rattan columns, and thus have become superfluous. They now float completely without purpose at the extreme ends of the device as though between heaven and earth, without any internal connection with the rest of the headrest, purely because they were once present, and because the primitive carver could not make up his mind to abandon them altogether. In very many headrests of this kind it is almost amusing to see how these 'retired' *telamons* still preserve their former body and have been carved as if they still had to bear the load which the rattan pillars have long since reduced.

It is now timely to revisit the type of headrests depicted in Figure 21 on page 478. I indicated earlier, on page 479, that the two small men could not have simply evolved from the forearms of the *caryatids*, but must be conceived as 'foreign elements'. It is now clear where these elements come from — they are the lateral end figures of composite headrests that the carver, obviously unaware, has borrowed from an entirely different art genre. They have sprung from a retrograde movement, and could be regarded as reactivated retired *telamons* if the expression does not sound too trivial.

Meanwhile, in the case of the composite headrests, the decline takes it course: *abacus* and *cymatium* merge into a single plate, while at the same time *canalis* and *pulvinus* masks disappear completely. The *astragalus* too, which has been preserved much more beautifully in composite headrests of good quality than in the monoxyls, and often confronted us in the form of lizards, disappears more and more, until finally only a thin little board remains, clamped between the rattan feet. Such a stunted form is illustrated in Figure 27 on page 484; both ends of the little board are still decorated, but it would be completely useless to speculate whether the ornamentation could be traced back to masks or to *telamons*. Every memory of good, old forms has long since disappeared, and has been superceded by helpless intentions. Finally, the entire headrest becomes a simple rod, which usually takes the form of a lizard or [486] crocodile, and in no way resembles its earlier stages of development. Not infrequently the retrograde movement goes so far that the rattan legs disappear again, and the legs of the crocodile are once more carved in one piece.

Almost at the end of such a series of developments is the headrest shown in Figure 28; it ends laterally in roughly-carved masks and might otherwise have been regarded as inconspicuous and unimportant if it did not bear the very definite statement "Admiralty Island".

Fig. 28. Headrest from the Admiralty Islands
S.M.S. *Möwe* Collection, 1898. 1/6 actual size

Headrests of this type have been hitherto unknown. In style it would not fit in very well; in shape it belongs without a doubt to the Humboldt Bay area. Therefore we would be best advised to think of it as a very recent carry-over, or as an influence that may be connected with the labour-trade. I have illustrated the headrest here on the one hand to draw attention to the possibility of such *bona fide* carry-over, and on the other hand because it is not entirely out of the question that similar forms are actually either already quite at home in the Admiralty Islands and have dodged our attention up until now, or have sprung from a new root and developed further independently. In both cases it would not be without interest to be acquainted with the form depicted here.

At the conclusion of these observations. two typical retrograde forms remain to be described; they are shown in Figures 29 and 30. Both are monoxyl, and both are from Potsdamhafen. The first is undoubtedly a combination of the simple and composite headrest; its upper half goes back to the Figure 16 type. In the middle, between *abacus* and *cymatium*, there are two pairs of angled [487] support beams, and on each side a retrograde *telamon*, very much stunted, and indicated only by a mask, which is hardly recognisable as such. However, the lower half of the headrest includes a plinth carved from a single piece of wood, and a replica of benches assembled from rattan feet.

Fig. 29. Headrest from Potsdamhafen
Tappenbeck. 1/3 actual size

The headrest in Figure 30 seems to be much more intricate. I would not dare to interpret it with authority, but I do believe that it too is a combination of a composite and a simple headrest. It is supported by a crude *telamon*, where nothing can be said with any certainty about its arms and legs. It appears almost as if the latter were markedly stunted, while the arms were all the more powerful, bent in a V on each side, and extending from the centre to almost the end of the head plate. However, I do not wish to consider this interpretation as absolute; on the other hand it is all the more important since at the ends of the bench hang the same small figures that we have earlier become familiar with as typical of the composite headrests. Admittedly they are somewhat stunted, but they can still be identified with absolute certainty. Its body has shrunk to a wedge-shape, which is leaning on the far side against the 'forearm' of the middle figure, but its head has remained virtually unchanged and likewise the so-uncommonly-characteristic bent posture.

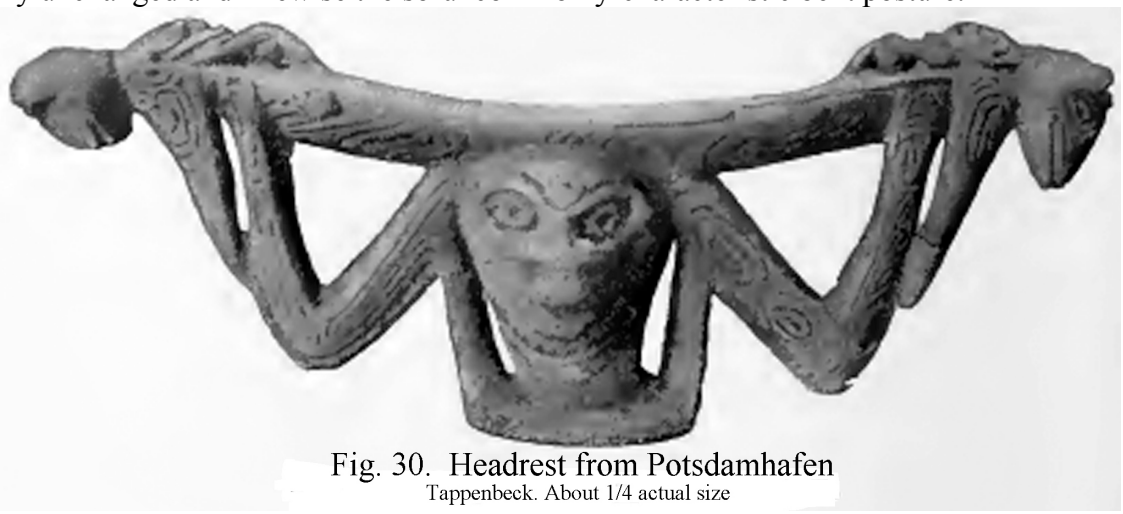


Fig. 30. Headrest from Potsdamhafen
Tappenbeck. About 1/4 actual size

In essence, we have here a monoxyl bench that otherwise has all the properties of a composite. Of course, the form could just as well be reversed from the type of the composite bench; one could then say that the rattan legs have been lost and been replaced by a *telamon.* [488] Both explanations would have the same effect; for the object itself, however, it is totally irrelevant whether an isolated headrest has arisen this way or that way. The only thing that matters here is the realization that there is at least an internal connection between the different types of headrest.

Just as "Ornaments are not freely invented, but have a long period of historical development" (von Luschan 1896:556) we must assume this is also true of all other creations of primitive art; also, these all go back to Nature and are not arbitrary, but subject to very specific natural laws. The skin folds between our fingers and toes and our earlobes become very powerful flight and steering apparatus in bats; our five metacarpal bones dwindle in the solipeds to a single metacarpus; the horse and the pig are genetically closely linked by a series of now-deceased intermediates which are, nevertheless accurately known from their remains. The poison glands of snakes and the crural glands recently discovered by Martin in Sydney in *Ornithorhynchus*, which delivered their poisonous secretion by a spur-like sixth toe claw, are similar formations, which emerged from analogous primeval structures, out of precise elementary ideas of creation. The cells of bees, the constructions of beavers, wasp nests, and the tracks of bark beetles, are objects of scientific observation — but that the same eternal laws for the bodies and for [489] the behaviours of animals must also apply to human artefacts seems, *a priori*, self-evident, but has not quite transposed into flesh and blood for us, and there are some otherwise intellectually very high-standing men in whom any understanding of such an observation is lacking.

I had demonstrated in 1894 (von Luschan, p.493) that our heraldic double-eagle had developed from the winged sun disc of ancient West Asian art. All of the intermediate forms are present. An 8 B.C. relief from Sendschirli, now in Berlin, depicts a sun disc that approaches the form of a double-headed bird in such a way that without a doubt it must be regarded as the transitional form to the few more recent double-eagles from Pteria and Hüjük; however these were later adopted and carried as coats of arms by the Seljuk princes, until finally the crusaders brought the double eagle, like so many other heraldic emblems, from the Orient to Europe. The connection is completely unbroken, and seems quite secure. I do not know whether anyone has publicly spoken out against it, but it has been verbally suggested to me more than once that such a transition would take place only in the familiar transformational pictures of "Flying Leaves", not in real art history.

The fact that such transitions occur in reality, and even belong among the regular, typical phenomena of primitive art, is familiar to probably all ethnologists, and does not always have to be proven anew. However, because these transitions can be studied so precisely in the field of Melanesian art, and also because the present book is going to be used by a wider circle than that of the real experts, it is necessary here to shed some light on the question. However, there is insufficient space for a detailed line of argument, but I refer the doubters to any of the ornament-series that have been published in recent years, such as the tattooing from New Britain and New Ireland illustrated on Plates 32, 36, and 37 in my *Beiträge* (1897); the series of spear decorations from the Solomons on Plate 38; and also the Swahili mats [490] photographed in the *ebenda* Plates 12 and 43. Whoever is not convinced by this series, I advise them to repeat an elegant experiment that was first performed by H. Balfour. It is not only very instructive but can serve at the same time as a 'social game'. You take an ordinary, simple line drawing of a house, or a bird, or a human head and let someone else copy it. The copy is then passed to a second person, to serve as a template for a new copy, which is then passed to a third person, and so on until around twenty or twenty-five people have practised their art in this manner. The result is highly surprising, usually tending to show that the final drawing depicts something completely different from the first.

Incidentally such a phenomenon is by no means without analogy in other fields; it is most closely related to the well-known amplification and variability of rumours, and also the changes that geographical and other names are subjected to when the population changes. The new immigrants always have the desire to change the old names until they make sense in their language; for example, out of "Capria lacus" the Turks made *köprü–su* = 'bridge over water', although there is not a single bridge; and out of "Sozopolis" *susuz–han* = 'han' without water, even though from this 'han' a leg-sized spring comes out of the rock. Similar examples exist by the dozens and hundreds all over the world. This would include formations such as the word 'ridicule', for the work-pouches of our ladies, which has evolved from *reticula*. Such changes too could be counted by the dozen. Likewise, they are essentially analogous to the fluctuations encountered in the art of primitive peoples; since there, there are chance deviations from the original form, which become gradually misunderstood, then incomprehensible, then ultimately lead to a new form which is again understood but which has lttle or nothing in common with the old.

Only in just such a way can we find a satisfactory explanation for the various types of New Guinea headrest. However, the image that we have drafted of them so far would be incomplete if we did not mention the types found in British New Guinea. These, however, are [491] highly inconspicuous and cannot be compared in beauty and artistic treatment with the forms that we have come to know from Dutch- and more particularly from German New Guinea. They are consistently monoxyl, and sometimes simply rough branches, whose irregular, smaller branches are hewn in such a way that they serve as feet or quite rough animal figures similar to the headrests of the Santa Cruz Islands or forms reminiscent of the Doré types, in which, however, the *telamons* have passed into total incomprehension in forms like birds' beaks. In addition, the headrests throughout southeastern New Guinea and the small groups of offshore islands are not only very rare in themselves but are also very irregularly distributed, so that they seem to be entirely absent from large districts. At present we do not know whether they have been superseded by hanging-mats in all these districts or what has otherwise replaced them.

By the same token we must be satisfied with the mere information that monoxyl headrests are dispersed throughout the whole of New Guinea, and originated probably from the area around Finschhafen, whereas the composite types resting on rattan feet are restricted to only a small part of the north coast: as far as our present knowledge is concerned, its centre seems to be in the region of the mouth of the Ramu. In any case they do not spill over into British territory, and in the west they extend only as far as Humboldt Bay and the Tanah-merah district, while they appear to be totally absent in the rest of the Dutch territory.

It is likely that wide-ranging ethnographical conclusions can be drawn from such findings. However, for the time being I shall restrict myself to drawing attention to this question, and to pointing out the gaps in our current knowledge. The question is interesting in itself, and deserves to be discussed before a wider audience: but my final appeal is once more directed to that smaller circle of those who are on the spot, and are thus in a position, being in direct contact with the natives, to procure further material for collections, make observations, and find explanations. Let it not go unheard. [492]

6. Decorated signal drums

In addition to the actual drums: the usual cylindrical tubes that are covered with a skin at one end, there is also a second kind of apparatus, which is likewise commonly known as a drum: big, roughly-cylindrical wooden blocks, which are closed on the end faces and have only a narrow, longitudinal slit from where they are hollowed out. When struck with sticks they make a very loud sound, and serve as alarm- or signal drums. They are widespread both in Africa and the South

Seas; particularly in Cameroon they have become the basis of a highly-developed ‘drum-talk’ which far surpasses our old optical telegraph and is almost at the height of modern telegraphy, since it permits the rapid transmission of any communication over very long distances and, without any restriction through wind and weather, always functions well by day and by night. [493] By switching on the required number of relay drums the Dualla can telegraph over the distance of several days’ journey and therefore the Europeans, before the secret was discovered, were not uncommonly anticipated in a very unpleasant way.

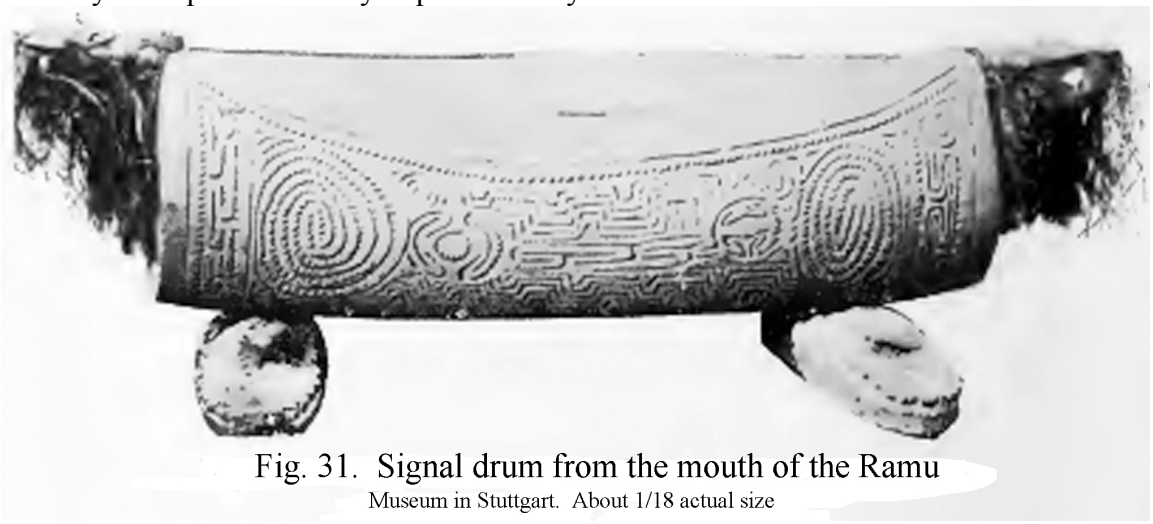


Fig. 31. Signal drum from the mouth of the Ramu
Museum in Stuttgart. About 1/18 actual size

In the South Seas the biggest drums of this type have come from Samoa and New Ireland but they are far surpassed by those from New Guinea, which we have encountered in recent years.

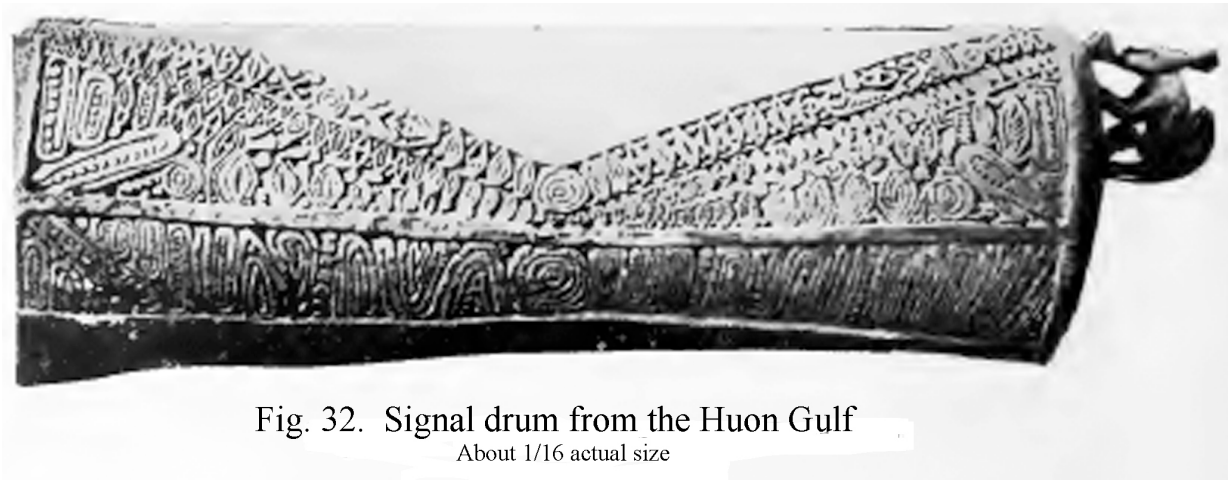


Fig. 32. Signal drum from the Huon Gulf
About 1/16 actual size

These are also distinguished by rich ornamentation, and are thus one of the most magnificent pieces in ethnographic collections. As far as I know, eight such drums have reached Europe: five to the Berlin Collection and one each to Budapest, Stuttgart, and Vienna. The biggest of these is 2.85 metres long and has a circumference of over two metres, but the other specimens too are of enormous dimensions and have certainly required several years in their production because they are made of very hard wood and both the hollowing out through the narrow slit, admittedly done by fire, and the decoration of the outer surface with a network of fine carving can have been done only very slowly, particularly since they totally lacked iron tools and probably only shark’s teeth and stone and shell axes were available.

Fig. 33. Part of a signal drum from the Huon Gulf
About 1/8 actual size

To enter into an explanation of the surface ornamentation I must default; it is almost invariably so highly stylized that it would seem to me more than daring to interpret it from an ivory tower [494] without the help of the natives. Indeed for such an investigation we possess immensely industrious groundwork in several recent writings from Dr Preuss (1897), but I am afraid that it is not yet possible to go beyond this to further secure results while the natives themselves do not teach us

Fig. 34. Part of a signal drum from Huon Gulf
About 1/8 actual size

about the names and meaning of the individual decorations. Such works are lacking so far; only in Berlin a Hungarian researcher, Biro, has begun to devote himself to this difficult task. He has communicated his results so far to the Hungarian National Museum; hopefully they will be published soon. In the meantime, he tells me in a letter that the so-called “Bird’s head ornament” refers back to the well-known, circularly-curved boar’s tusk; the “salamanders” and the “flying birds” to fish; and also that Preuss’ “hanging Pteropus” is dubious. In any case the matter is not yet ready for discussion, and it is very much to be hoped that in other parts of New Guinea there will be thorough investigations of the significance of the individual ornaments. The illustrations of

drums here [495] have, therefore, been selected not only for their beauty, but also for the hope that our countrymen in New Guinea might try to give the natives themselves accurate explanations.

In this regard, I should like to draw attention to the remarkable handles of these drums. As Figures 32 to 35 show, these are very elaborately-carved, one-piece round figures and groups. Their importance as a handle corresponds to the fact that they are not orientated perpendicularly, but horizontally, so that they must be rotated through ninety degrees if you wish to illustrate them comfortably, as has been attempted in Figure 35. The simplest is the representation in the above-mentioned very large drum in the Berlin Collection. There is only one human figure on each side: one a female carrying a large, oval bowl on her head, the other a male whose raised hands reach out over a wide radius, from which it is doubtful whether they belong to a headrest or whether they represent his own ears. At least one handle of another drum illustrated on the left of Figure 35 is similarly fairly transparent. There we see a big, four-footed male animal, creeping on all fours, whose head is inserted into a very high human mask. It is, of course, not entirely ruled out that this

Fig. 35. Handle of the signal drum from Huon Gulf illustrated in Fig. 33

[496] animal could also be a man crawling on hands and feet. What we would consider as the tail of the beast must then be regarded as bosses, which have been left only for greater strength. Conversely, on the back of this animal (or man?) there is clearly a second four-footed, equally-masculine animal with a large, serrated throat and a ringed tail similar to the animal that is recognizable roughly in the middle of Figure 34. The significance of this group is unclear to me, but it does give the impression of a scene that is familar to the natives and understandable at first glance. Even more remarkable is the representation on the other handle of the same drum, illustrated on the right in Figure 35, whose other side can be compared in Figure 33. The position of the great mask of the other handle represents an entire human figure; behind this is a very peculiar malformation consisting essentially of two headless female bodies which have grown with their backs together. Just as with many Janus formations it thus becomes a duplication, which appears as if the left extremities of one twin and the right extremities of the other belong to one body, and the right of the first and the left of the second belong to the other body. This cannot possibly be fictitious but is undoubtedly a valid observation, just as we now know that such twinnings play a real role in Oceanic mythology. For example, Taema and Tilafainga were twin sisters who had grown together in the manner of Siamese twins, but were later freed from each other. This gave them such a great fright that they sprang into the sea. They stand connected with art and with the spread of tattooing, and they have even swum from Fiji to Samoa to introduce tattooing there. A different version of the same myth recognizes the amalgamated, and then

separated, female twins with the names Taema and Titi. Similar myths certainly exist in New Guinea, and form the basis for the representation on our handle. In addition to the upright figure and the double malformation, this also has a third element: a four-legged animal with a tail, which corresponds with the upper animal on [497] the other handle of the same drum, but resting with his feet on the hands and feet of the upturned half of the deformity.

Only one handle is retained on the drum illustrated in Figure 34, the other has broken off. The handle remaining is very similar to that shown on the left in Figure 35, it also depicts a beast walking on all fours with a large human mask; the latter has the Ω-shaped jewel in the septum of the nose characteristic for a part of German New Guinea. A second animal had been carved, standing on the animal's back; it has unfortunately broken off, but head and tail still remain, and indicate with some certainty that the group must originally have been very similar to that illustrated on the left of Figure 35; only the object upon which the chin of the mask appears to be supported is new and peculiar. It is arranged symmetrically about the long axis of the drum, and each half has roughly the form of a nose with the nostrils looking outwards. I have no explanation for this part of the carving. Just one of the eight such drums that I know of, has an almost-round protuberance on the surface of the mantle: as Figure 33 shows, it is very rough and stands in striking contrast to the care with which the surface carving of the same drum and all the others is carried out.

Two of our drums are covered over their whole length with an apron-like hanging of fine grass fibre, possibly to protect the carvings from the rain. However, the drum depicted in Figure 34 also has, on its lower half, in the somewhat protruding bar separating the lowermost decorated strip from the middle, several groups each of three bored holes that have been used probably for securing the grass hanging, which in this place however may have had only the significance of an ornament. Three such drill holes are shown on the illustration, near the left end. For protection against soil dampness and probably also to amplify the sound, the drums are placed on small blocks, carved in one piece, like those that actually belong to a different drum. Figure 31 was able to be photographed at its proper location. [498]

Fig.36. Ancestral figure from the Ramu mouth Tappenbeek. About 1/8 actual size

7. Ancestral figures and Skull Cult

Belonging among the darkest points of the ethnography of the dark island kingdom are the small carvings in the form of human figures, which we hold in such great numbers, mainly from the Solomons and from the German and the Dutch regions of New Guinea. True to the old traditions adopted by Finsch, travellers tended to regard them as idle gimmicks, and simply collected them as curiosities. Thus the Berlin Museum has hundreds of such figures, without a single definite indication of purpose and meaning. In most cases these effigies come under the unsaid label *geschnitzter Götze* (carved idol) in our collection, and in the Netherlands too they were simply listed as *houten Beeldjes* (wooden figurines). Supposition-wise, some declared that these would be 'ancestral figures', others were declared to be 'talismans'; however, any reliable information has yet to materialise. We can anticipate it only when multilingual missionaries undertake such investigations, even if our other countrymen out there have once resolved to learn the native languages. Yet whoever in New Guinea undertakes such an investigation will acquire great merit, and erect for himself an imperishable monument in the annals of ethnology.

That earlier travellers collected such carvings and brought them home has surely been highly meritorious already — but such matters are not done with, by mere collection. Spears and shields can, of course, be gathered like butterflies and beetles, where the indication of time and place is sufficient. However, in the case of objects which are connected with completely unknown religious ideas, it is urgently necessary to determine the significance of each individual piece. And this is the area [499] where the ethnology is primarily concerned with the cooperation of the missionaries; for they, above all, are called upon to study the religious ideas of the natives and record these for posterity. This is not only their duty to science, because they contribute more than all the others to the rapid disappearance of the old usages and customs, but it is also to their own advantage, for how could missionaries ever think of teaching a new religion without knowledge of the old? Thus the so far still very miserable successes of missionary activity in most Melanesian

Fig.37. "Ancestral figures" and other effigies from the mouth of the Ramu
Tappenbeek Collection. About 1/3 actual size

areas for the most part can be traced back precisely to our almost total ignorance of the native religions. Hence mission and ethnology equally depend on mutual support and assistance, as we have long ago observed, and also political successes in the Protectorate can always only be expected and achieved on the basis of ethnological experiences, and ignorance of ethnological conditions has been followed all too often by political failures, and by great losses of money and human life.

The great successes that had been achieved in other Protectorates [500] by the likes of Sir George Grey or Hermann von Wissmann were based primarily on the fine understanding that these men brought with them to ethnology, and in their affectionate approach to the psyche of the people entrusted to them, and there is certainly no doubt that a third high colonial official, Sir William MacGregor, former governor of British New Guinea, has earned imperishable grandeur not only as an explorer but also as a political official.

Thus, for the German part of New Guinea also, our whole hope is now directed on the new imperial administration and on the missionaries, and we expect that the joint work of all those

involved will succeed, at the last moment, to save the mysteries of Papuan religion and mythology for science and for posterity before it is irrevocably too late, before it melts like virgin snow, irretrievably, before the superior power of the white man, never again to be reconstructed because of the Papuan's lack of written record, when the right moment to hold on to it has been neglected through thoughtless levity and brutal arrogance.

For the time being, we can judge most of the carvings from New Guinea only from their external form, and we must confine ourselves to examining their style and their geographical distribution. Figures 36 – 43 illustrate typical representatives from the German parts of the island. Almost without exception, the figures of this kind lack a pedestal, hence they cannot stand themselves and are somehow attached or suspended. The square pedestals on which they are depicted are a later, museum influence. Exact description of individual types would lead us too far, and, through the figures, it is at least partially rendered unnecessary. However, it should be pointed out that, in addition to completely stylized figures, there are those that are almost naturalistic, and must probably be regarded as portraits. This seems likely especially for the pieces illustrated in Figures 36 and 41, as well as for Figure 42 which, with its headdress made of actual human hair and its ear and nose ornaments, borrowed from reality, makes a totally natural impression. In a certain sense this could also be true of the series of carvings for which Figures 38 and 39 [501] [502] are presented as typical representatives. Although they appear quite unnatural in their proportions, at least the painting of the face and the rest of the body makes an individual, and personal, impression. This will never be maintained by a carving such as shown in Figure 43, and the great series of figures with excessively-long noses, as shown in Figures 37c, 37f, and 40, cannot be applied to real portrait–representations. The term "talismans" for such [504] figures is by

Figures 38 and 39. Two "ancestral figures" from Twenty-Mile Island Tappenbeek. About 1/3 actual size

Figures 40 and 41. Two “ancestral figures” from the mouth of the Ramu Tappenbeek. About 1/3 actual size

Figures 42 and 43. Two "ancestral figures" from the mouth of the Ramu
Tappenbeek. 1/3 and 1/2 actual size

no means satisfactory, and the names explored by Biro for related forms do not yet provide any clues as to their correct interpretation. Likewise, the not-uncommon double figures after the manner of Figure 37d remain incomprehensible. On the other hand, it is not impossible that the carvings that represent a figure bearing a second smaller figure on their shoulders, actually represent people bearing their children. Admittedly we know that at least smaller children are not carried on the shoulders in this way in New Guinea, but in big, net bags.

Fig.44. Ancestral figure from Geelvink Bay
About 1/3 actual size

The style that we find in the analogous figures in the Dutch section of New Guinea is totally different; great numbers of these are illustrated in the book by de Clercq and Schmeltz (1893), and so it suffices to show only a single specimen, Figure 44. Almost without exception these figures stand on a plinth, which is carved with them, in one piece. Stylistically, they are distinctly more uniform than the widely divergent forms in the east. The large square head, which is almost half the total height of the crouching figure, is especially characteristic of them. As a rule, the figure holds a shield-shaped object, usually carved in filigree, directly in front of them. In most pieces of this kind they cannot be interpreted of themselves. However, there are other pieces where it is absolutely unquestionable that this is a second human figure. A glance at Plates 34 and 35 in the above-mentioned book will confirm this, and in our Figure 45 you can easily recognize the smaller figure which is held by the bigger one. In this connection too it seems [505] possible that in the other pieces as well we have to recognise a stylised, stunted human figure in the shield-shaped object. Given the present state of our knowledge, we cannot be sure of this, but it would be worthwhile to examine a great number of such figures. In the meantime, I would like to point out that even the heart-shaped shield in our Figure 44 still shows elements that could be perceived as two eyes and an open mouth with rows of teeth.

Nothing is known for the time being about the significance of the second figure; it is found in a similar fashion also in British New Guinea. There, carvings in the style of the “ancestral figures” of the north and west of the island appear to be almost totally absent, but for this reason we have a rich source of knowledge of indigenous craftwork particularly in the amazing artistry shown in the production of the lime spatulas of the betel-chewers. These spatulas are moistened with their flat tip in the mouth, then inserted into a container of burnt coral lime and put back in the mouth with the betel. Their handles are always richly decorated, so that these spatulas are among the most beautiful and precious items in ethnographic collections. Unfortunately however, they are also the subject of widespread trade exchanges among the natives, so that they are often found a great distance away from their places of manufacture, and are therefore not very useful for determining the artistic style of the individual ethnographic provinces, because in many cases their actual homeland cannot be ascertained. Figure 46 illustrates just such a spatula with two figures on the handle, a larger [506] one and a smaller

Fig.45. Ancestral figure, definitely from Dutch New Guinea, yet found on an island in the Admiralty group
S.M.S. *Möwe*. 1/4 actual size

Fig. 46. Spatula for lime for betel chewing, probably from Samarai or Kiriwina
Gift from Dr Krieger, 1/3 actual size

one, that seem to belong to the same circle of representations as the carvings described above: from the northwest of the island. I will now refer to Figure 47, the illustration of a second such spatula, which is quite remarkable for this genre, both in its very rare asymmetry as well as in its very fine and careful design. We see a crouching figure, the chin supported by the right hand, the forehead by the left, in a position that could be described as 'reflective', if you do not prefer to trace it back to an injury or, better still, leave it totally unexplained for the moment. Apart from its significance, the piece is so remarkable that it is well worth mentioning here, although it is presumably not part of the group of actual 'ancestors' to which this section is devoted.

On the other hand, it would perhaps be appropriate to enter into a general discussion on the nature of the ancestral images; lack of space, as well as the great uncertainty especially, that still hovers over this question in the South Seas, prevents me at this point from dealing with it in detail. However, I can also suggest that probably in New Guinea too, it is the dead appearing in a dream who provide the initial reason for the development of most religious concepts. Whether it be mourned and beloved friends and relatives, or dreaded chiefs, or hated enemies who appear to us after death in dreams, alive and exactly as we knew them in life, such a dream image will always give impetus to thoughts about the continuity of life after [507] death, and thereby become a source of religious concepts, and especially of an ancestral cult. Under what forms this is practised in New Guinea, we know at times only in the broadest outline while we are still completely ignorant as to its real nature.

Fig. 47. Lime spatula for betel chewing, obtained in Port Moresby
From the estate of Prof. W. Joest
1/3 actual size

Hand in hand with care of the ancestors, in New Guinea we find the skull cult also flourishing. In the British section of the island skulls are carved and beautifully painted, similar to those of the Dayaks in Borneo. In some districts even the teeth are artistically braided with threads of twine, to prevent their falling out. On the Fly River, according to d'Albertis, skulls are decorated with red *Abrus* seeds and provided with cowry eyes, and we know of painted skulls with artificial, turtleshell noses, from several islands in Torres Strait. The most striking of this type, however, are the skulls prepared by the Neneba on Mount Scratchley: with an immense, carved wooden nose; barbed, protruding eyes; and a face formed from a resinous mass and covered with coix seeds.

In Kaiser-Wilhelmsland, as far as we know, the skull cult is little developed; however we found it in the west of the island, especially on Geelvink Bay. In 1865 Finsch recorded how skulls of deceased family members are dug up and consecrated as house-images in Doré, and since then we have had a series of further reports, all from Geelvink Bay, according to which skulls are painted; or stored in baskets; or large, carved wooden figures are even stored inside the skull. Given the difficulty of verbal understanding, it is difficult in some cases to determine whether these are always the remains of relatives, whom they want to honour, or

whether they are the skulls of enemies that are being stored as trophies and *Apotropaia* [magic charms]. As in New Zealand, so too in New [508] Guinea both forms of the skull cult seem to occur side by side, whereas elsewhere in the South Seas usually only the skulls of slain enemies are stored in a special way. More accurate reports and evidence to shed light on this relationship would be extremely desirable and valuable.

In this context it is necessary to mention an hypothesis that the human figure, as we so often encounter it in the carvings of indigenous peoples, is not to be regarded as a reflection of that

Fig. 48. Human skull, Neneba (Mount Scratchley), with a gigantic wooden nose; the face covered with coix seeds

actual human being, but to let in emerge from the "skull pile". The idea is quite perverse, yet it is so serious that it seems to me wrong to completely ignore it at this point. Jealousy poles and *Truncis arborum antefixa ora* [faces were fixed to trunks of trees] of Tacitus are certainly spread over a large part of the earth. (Cf. the instructive- and still contemporary chapter *Schädelkultus* in Richard Andree's *Ethnographische Parallelen und Vergleiche*, Stuttgart, 1878). However it goes against the common mind to regard it as the source of the human figure in the art of indigenous people; such an idea is just as perverse as if someone were to make us believe that the portrayal of the man in modern European art would have had its source in a scarecrow hung with clothes. [509]

8. Masks

The most common ethnographic oddities are the masks. In Europe where they were still so important to antique drama, they are now more limited to a few small mountain areas and moreover, they have degenerated into a spiritless carnival device. But in other parts of the world they play a far more important role, which admittedly over only a few decades has begun to be more closely known and its scientific importance studied. Tibet and East Asia, Ceylon and Alaska, as well as the West African Guinea coast and its hinterland are large centres for the use of masks, but nowhere else can we find them in such overwhelming variety as in New Guinea. Volumes could be filled merely with the illustrations that have been handed

Fig. 49. Motu-Motu man with a large mask Berlin Museum

down to us from there. Unfortunately, nothing is known from New Guinea about their true meaning. They are usually used for ceremonies where they help to represent certain persons: ancestors, chiefs, princes, demons, or gods; somewhere else they are supposed to conceal their bearer from humans, elsewhere from higher beings and make the bearer unrecognisable, [510] and elsewhere again they have other meanings — their study is one of the most important tasks relating to the people's history.

Fig. 50. Mask from the mouth of the Ramu
Tappenbeek, 1/4 actual size

Fig. 51. Chest ornament with a mask-like carving, surrounded by boar's tusks, Muschu Island
About 1/5 actual size

In British New Guinea Haddon has begun to deal with the importance of the masks more closely than his predecessors, and his most recent voyage in particular, from which he has returned these last weeks, may also yield important results in this area (Haddon, 1894). In any case, the fame for producing the biggest masks in the world rests with the English part of New Guinea. A mask from the Gulf of Papua, two metres long and four metres high is in the British Museum, but unfortunately it cannot be displayed there because of a lack of space, and likewise, large masks are also in Edinburgh and Glasgow. The largest example in the Berlin Collection is illustrated in Figure 49. It is taller than the height of a man, and [511] is made of brightly-painted, richly-decorated bark that is stretched over a frame of strips of reed and the ribs of palm fronds. Among the many other types of mask in British New Guinea the masks from Torres Strait are especially remarkable, made entirely from turtle shell. These belong among the most interesting and precious pieces in the larger collections.

Even more varied than in the British south of East New Guinea, is the abundance of masks in the German north. It cannot be my task here to describe, or merely to rccord even the smallest portion of these virtually countless types. As a sample, I am showing just one mask from the large collection from the Ramu Expedition, which the Berlin Museum has recently acquired. The nose is elongated and pointed, like a bird's bill; a grotesque beast is featured in the forehead region, its head extends down onto the bridge of the nose. The entire mask is brightly painted, and of great beauty despite its bizarre form.

As to the meaning of this form and all the other masks from Kaiser Wilhelmsland we are still completely unclear. According to a verbal communication from my colleague Janko of the Hungarian Museum, Herr Biro has reported that he became familiar with sixty different dances from the Berlinhafen area alone, that were usually performed with masks. Biro's new reports will hopefully soon be published, but from the other areas of Kaiser Wilhelmsland too, detailed investigations on the masks will hopefully not remain outstanding for much longer.

We also find small, mask-like carvings, far too small for real use, in the German section of New Guinea, repeatedly in use as it seems, somewhat in the manner of talismans. Possibly this also includes the peculiar chest ornament which is shown in Figure 51. Here we see a small, colourful mask with a bird-like nose, surrounded by a wreath of boar's tusks and a beard of real human hair

bordered by a row of *Nassa* shells and ending in a large, luminous *Ovula ovum* snail; the whole ornament is attached to a braided cord that can be worn around the neck. [512]

9. Notes on New Guinea ornamentation

To this most difficult chapter of Melanesian ethnography, only a few leading points can be briefly given here. Firstly, Haddon has given proof that the tribes of British New Guinea can be classified by their ornamentation better than any other way, and can be combined into individual ethnographic provinces. In a similar way, Preuss tried to do the same for the German part of the island, while for the Dutch part, the material, which is still too sparse, does not yet allow a further division. As for the east of the island, our knowledge is so incomplete that we cannot regard the attempts made at subdivision as completely definitive and infallible. However the ornaments give us a comparatively secure guide, and we are gradually drawn to it, in the hope of being able to reach a final oversight.

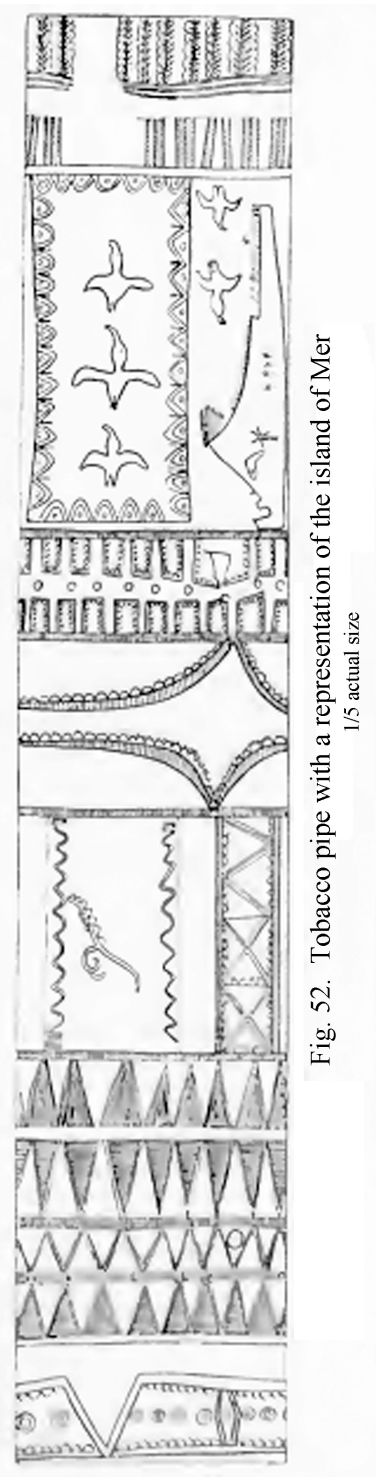


Fig. 52. Tobacco pipe with a representation of the island of Mer
1/5 actual size

The time of rooms of rarities and galleries of art, when New Guinea was lumped in with New Holland and all the island groups of the South Seas as “Australia”, gave way to a period when New Guinea would be regarded as an ethnographical entity. With the further development of the island, however, it was soon recognised that there was no question of any unity, and the conclusion was reached that the present political boundaries on the island coincidentally corresponded with the ethnographical dividing lines. But this view, too, is now shattered. Kaiser Wilhelmsland disintegrates ethnographically into at least five or six regions. British New Guinea into six or seven; and the Dutch section of the island into just as many — admittedly its entire southern part is still virtually unknown, although the region from Misool and Salawati, MacCluer Gulf and Geelvink Bay would certainly form one ethnographic province, while the extreme east of Dutch New Guinea with Witriwai, Tana-merah and Humboldt Bay is ethnographically connected to the neighbouring German territory.

The ethnographic provinces in the English part are by far the most beautiful. The most distant among them includes the islands of Torres Strait and the immediate coastal area of the main island, known as Daudai, and forms the southwestern half of the great [513] Fly River delta. This is the area of the big, beautiful, turtleshell masks and the engraved and branded animal figures on many items of everyday use. Particularly on the tubes named *bau-bau*, used for smoking tobacco, we found a total of over twenty representations of animals, all simple line drawings yet carved with such good definition that they can be zoologically identified without difficulty; for example sharks are always recognisable by their heterocercal tail fin. Figure 52 shows the rolled-up mantle of just such a pipe stem, with the beautiful seagulls, one of which is illustrated at original size in Figure 53 to show the technique better. This one pipe stem, which belongs among the older collections of

the Berlin Museum and was acquired through an exchange with an outside collection, is therefore especially remarkable, because among its decorations is a real 'landscape': an easily-recognisable sketch of the island of Mer in Torres Strait, which the natives compare with a dugong because of its shape. The sketch clearly shows the volcanic peak of the island with a grey cloud, native huts at both ends; in the middle of the right hand slope a precipitous wall, several palm trees and, next to the largest of these trees, under the summit of the mountain, a kind of eye that corresponds to a real ground formation, which is explained by the natives as the eye of the dugong. A few years ago Haddon was on the spot and produced a sketch of the island of Mer; he points to the similarity of both sketches. [514] Most surprisingly however, the sketch on the Berlin pipe is reversed, like a mirror image. This is reminiscent of the well-known fact that very many natives unconsciously write a mirror copy when they try to paint European letters. Evidence for this could come from Hawaii and Samoa, New Zealand and the Marquesas, but repeatedly from West Africa also. There is, as yet, no plausible reason for this phenomenon; the explanation that one starts counting with the little finger of the left hand and then (at ten) continues from the little finger of the right hand, seems insufficient to me. I would prefer to think of a similar kind of awkwardness, like the one that causes us to write mirror image, when we place our paper on the underside of the tabletop and try to write.

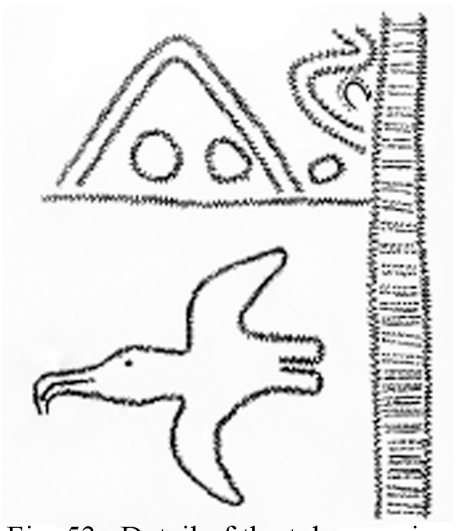


Fig. 53. Detail of the tobacco pipe in Fig. 52
actual size

These *bau-bau* pipes are extremely remarkable not only for their ornamentation but also for their principle. Besides the big opening on one of the faces, they have a small hole in the surface of the mantle in which a small tobacco-filled leaf cone is inserted and lit.

Then the person smokes from the big hole for as long as it takes the whole pipe to be filled with smoke; then the burnt-out cone is removed; the big opening closed; and the smoke is drawn through the small lateral hole. Elsewhere among the ornaments of the Daudai area, one above all is very interesting, because it goes back to the larva of the ant-lion (*Myrmecoleon*). Another ornament has developed out of two anchor-like angling hooks laid next to each other while arrows are usually decorated with crocodiles and snakes, but often also with human figures whose heads are treated exactly in the style of the big turtleshell masks.

The second ethnographic province covers the entire area of the Fly River and the coastal stretch to Cape Blackwood. Very [515] special drums, a certain style of decorated bamboo pipes, and a leaf ornament are characteristic of this area.

The third province includes the east coast of the Gulf of Papua from the Aird River to Cape Possession. Here belong the gigantic masks, one of which is illustrated in Figure 49; magnificent, carved wooden belts; and beautifully-carved and painted shields. The fourth province stretches from Cape Possession as far as Mullen's Harbour, and from the coastal strip to the crest of the Owen Stanley chain. It is characterised by strikingly many Polynesian elements, which are soon confronted here by the Melanesian, and have merged with them once again. Haddon unhappily calls this province the "Central District". In Berlin we have begun to call it the MacGregor District, because it includes Port Moresby, the seat of government, where His Excellency Sir William MacGregor has also achieved such a great and imperishable contribution for science.

The fifth province, the Massim district, encompasses the island's east coast, from Mullen's Harbour to Bartle Bay on the north coast and all the small island groups in the east, which we now call by their local names: Moratau- Kiriwina- Murua- etc groups, whereas in the past they were listed, extremely unsuitably, as the d'Entrecasteaux Islands, the Trobriand Islands, the Woodlark

group, and so on. Coming from there are the richly-ornamented Kiriwina shields, the beautifully-carved limestone spatulas, and the splendid calabashes decorated by branding. A few patterns are shown here, in Figures 1–4. We shall return to these shortly.

The sixth province covers the northeast coast, from Bartle Bay to the German border, that is, to the Gira estuary in Mambare Bay or, more simply, to the German Huon Gulf. This area is still virtually unknown although if the richness of its two neighbouring regions can be tapped into its own, it will still be a source of many joyful surprises. The extent to which these new ethnographic districts, generally confined to the coastal region, will be joined by new provinces cannot even be predicted with any certainty.

Fig. 54. Carved axe handle from Potsdamhafen
Tappenbeek 1/3 actual size

Similarly, the German part of the island is divided into a series of individual ethnographic provinces. If we begin [516] in the east, we first have a little-known district, corresponding to the southern part of the Huon Gulf, from the British border to Cape Parsee. It is especially distinguished by the appearance of particularly bizarre jewellery and transversely-positioned shields. Much better known is the next district, which extends as far as Fortification Point, including Simbang, Tami, and Finschhafen. Belonging here above all are the monoxylic headrests described on page 473 *et seq.*, beautifully-carved drums, and ornate coconut shells, and colourfully-painted carved boards, up to four or five metres long, used as house decorations.

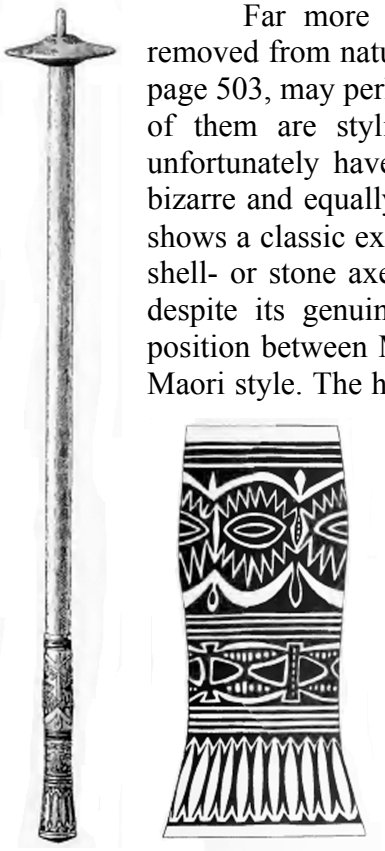
The next district, which extends from Fortification Point to Cape Croisilles, includes Astrolabe Bay. Here the art has markedly regressed from that of neighbouring districts. Masks and carvings are roughly, almost carelessly carved and painted; only the decorations on combs and turtle shell armrings look passably good. Besides plaited shields we have here, especially on the small island of Bili Bili and the neighbouring mainland, the large round ones, as shown in Figure 11 on page 464. [517]

The fourth district, extending from Cape Croisilles to Berlinhafen, is distinguished by an overwhelming abundance of magnificent carvings. Here belong the beautiful ‘composite’ headrests (cf. page 482 *et seq*.); here too the throwing boards with their carved supports, where we find the bandicoot, the crocodile, the hornbill, and possibly also a species of Orthopter represented; and here too, the most beautiful masks and ‘ancestor effigies’ in the whole island.

A fifth and a sixth district form the countryside on the Ramu and Augusta rivers, both of which are still too little known to be briefly characterized. As the seventh, and last, district, we finally have the area from Berlinhafen to Humboldt Bay to be recorded. Here belong beautiful chest jewellery plates (or “heart shields”, cf. page 465) with split boar’s tusks and red *Abrus* seeds; here the markedly-degenerated headrests (see page 485); here also the small, decorated calabashes for the gonads. As already mentioned, there appears to be no sharp boundary between this district and that of Tanah-merah in the Dutch part of the island.

In addition to this more geographical approach, we can also assign the artistic achievements of the natives of New Guinea to different groups, according to their natural development. We would have had to begin with those small pieces that have confronted us as faithful- or as faithful as possible imitations of nature. Typical examples of this would be many masks, which actually represent a real human face, which with its expression and with its customary red or bright painting is reproduced true to nature; or figures such as that illustrated under Number 41 on page

502; the animal figures of Torres Strait; and of course those landscapes that are so faithful that they can be recognised as true images of a certain region. However, such works of art seem to be exceptionally rare in New Guinea; apart from the view of the island of Mer reproduced in Figure 52 on page 513, only one single, similar representation seems to have arrived in Europe, and is found at Oxford.



Figs 55 and 56. Striking axe with a round stone blade and richly-decorated handle. Finschhafen.
Warburg. 2/15 and 1/3 actual size

Far more frequently we find carvings in New Guinea that are markedly removed from nature; many of them, such as the figure depicted under Number 43 on page 503, may perhaps [518] still have to be interpreted as individual caricatures; most of them are stylised and ossified forms with a very definite meaning, which, unfortunately have usually been unknown to us until now. Added to these are the bizarre and equally incomprehensible combinations, of which Figure 54 on page 516 shows a classic example of outstanding beauty. It is an old, richly-carved handle for a shell- or stone axe from Potsdamhafen: a piece of which one could almost say that, despite its genuine New Guinea type, it nevertheless occupies a kind of central position between Melanesian and Polynesian art, and is somewhat reminiscent of the Maori style. The handle itself consists of four lizards or crocodiles, each pair opposite and clasping each other; the larger pair wears a heavily-stylised mask that extends up to the knee of the shaft, while the handle runs out into a human foot. The shank itself is highlighted by a bird, the shorter crosspiece by three human figures: the larger one looking upwards, the two smaller ones to the sides; associated with this is a flat, tongue-shaped piece, which is undecorated and served to secure the mussel or stone blade.

A completely different series of artistic achievements has also been initiated by Nature, but is perhaps less occasioned by fancy than the disparity between [519] the hardness of the material and the inferiority of the metallic tools, so degenerated that in very many forms the original product is often very difficult for us to recognise and is often not recognisable at all. Collected here is the largest number of all the art forms of New Guinea. A very typical example is the stone club [*sic.*] from Finschhafen shown in Figures 55 and 56; the handle depicts a series of figures that previously would have been simply referred to as “geometric”. Today, many a person, possibly going a bit too far, speaks of an eye-, a tooth-, or a mouth-motif, and the representation in the lowermost row is considered to be a roundelay of dancing men, who, however, during the course of their regressive development would have completely lost their heads. It is natural that the interpretation of such ornamentation is one of the most tempting occupations of ethnographers, but it seems that one can easily go too far, especially when such studies are undertaken with insufficient material and without the expert knowledge of native artists. For this reason I will also dispense with a more precise analysis of the splendid decoration of the lime calabashes, illustrated in Figures 1–4; these are some of the most beautiful works of art in British New Guinea, but also among the most difficult to interpret. I would consider myself very fortunate if the good illustrations presented here not only give us a proper concept of this art genre but also trigger our English friends out there in the Massim district into an in-depth investigation. An almost equally difficult task, the analysis of the Kiriwina shields, seems to have been a happy success most recently for the Reverend S.B. Fellowes. On these shields, of which our collections hold a large number of consistently-painted examples, the most frequently-occurring animal elements are the following:

1. *kubwana*, the morning star, which rises just before dawn, when the *sikwaikwa* bird and the *leko-leko* chickens start crowing.
2. *kaiuna*, snakes
3. *sasaona*, small fish in the creeks and shallow water
4. *siwai*, a flat fish, like a sole
5. *vikia*, frigate bird [520]
6. the above-mentioned bird, which announces itself in the morning twilight
7. *bulibuli*, the tail of the manucode
8. *haia*, earrings of the natives
9. *lubaka idoga*, the rainbow
10. *ubwala*, stars, smaller than the *kubwana*

10. On geographical nomenclature in New Guinea

In our time, the geographic names in the South Seas are infinitely more important to ethnology than to geography. There are, at present, many more ethnographers who deal with the South Seas than geographers, and from this point of view it must appear justifiable at this point to draw the geographical names of the area into the circle of consideration. I have briefly illuminated the terrible mischief that has just happened in the South Seas with the changing of geographical names in the *Zeitschrift für Ethnologie* (1898:390) and had to delight in this study of the express and unreserved approbation of most of the geographical journals. Nowhere in any area of the South Seas has the geographical rebirth-mischief been more exasperatingly and shamelessly conducted than in New Guinea. Our Foreign Office is to be introduced to all the temptations and impositions of similar nonsense, which are manifestly in the currents or rather the undercurrents of the time, and in our African protectorate as well, all the time with the greatest emphasis and with inexorable energy, for which future centuries will be grateful to it. Only in the South Seas has the Foreign Office so far lacked the possibility of energetically intervening, and daily curbing the storm surge of several new names. This will be different, and just as elsewhere, the blessing of direct imperial rule will now pour out in large quantities over New Guinea as well, and we may expect that the geographical nomenclature will soon be channelled again in the correct direction and, where it does not do this, will be persuaded to do so. [521]

I have made clear the principles that can be used here, in the *Zeitschrift für Ethnologie* study, and summarised them in the following propositions:

1. Wherever possible, and just as it is taken for granted elsewhere, in the South Seas too the indigenous names are to be retained, and therefore established with the greatest care.
2. Where indigenous names do not occur, or cannot be ascertained with certainty, the names given by the first discoverers come first into consideration.
3. Arbitrary modification of long-standing, generally well-known and recognised names is a gross mischief that is to be rejected absolutely.

Where incorrect and arbitrarily-formed names exist, it is advisable to replace them as soon as possible by the indigenous- or otherwise-correct names. At some time this has to happen, and the sooner it happens the less the wrong names have time to become established, and the smaller are the transitional disturbances, which cannot be totally avoided during the return to reason and truth. The history of oceanic names teaches us that this return has, so far, always taken place, and had to take place, with fundamental natural power; struggling against it would have been utterly in vain. Who, today, still knows the “Navigator Islands” or the “Friendly Isles”, with which our

grandfathers had linked such fantastic tales? Even the Sandwich Islands have finally disappeared from the charts, on which the names Samoa, Tonga and the Hawaiian group are appearing more and more; likewise, the names Rarotonga and the Tahiti group are now established for the Cook and Society Islands, and will be listed as the sole contenders in the foreseeable future.

In recent years the administration of British New Guinea has also taken account of these ideas in a clear and purposeful way, and simply thrown overboard all the junk of unsuitable and confusing names with which she too had to struggle. The new official charts, which have appeared in their Annual Reports. no longer have the old [522] names (or only retain them in brackets) and so in the future we will only have to adhere to names like Tarawai, Duau, Moratau, Tauwarra, Kiriwina, Vakuta, Murua, Nada, Samarai etc., and the uncomfortable names of Bertrand, Normanby, Fergusson, Milne-Bay, Trobriand, Lagrandière, Woodlark, Laughlan, Dinner Island and hundreds of others with which our memories had hitherto been uselessly burdened, might soon be forgotten. Considering that we alone in the South Seas have to deal with roughly six thousand geographical names to which each *would-be* discoverer is justified in adding to anew each day, we are gripped by a feeling of gratitude, with which every man of science salutes the courageous and energetic approach of Sir William MacGregor and the British Colonial Administration.

For this reason, now our Foreign Office, where the way is free, will not disavow in the South Seas the glorious traditions which it has hitherto recognized as authoritative and correct in the African nomenclature — and the gratitude of not only the scientific world but also of all authorities and private individuals who are involved only in the destinies of our oceanic protectorate will be assured for all time. [523]

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